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TMD DISCUSSION PAPER NO. 46

AFTER THE NEGOTIATIONS: ASSESSING THE IMPACT OF FREE TRADE AGREEMENTS IN SOUTHERN AFRICA.

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The views expressed in this paper are those of the authors, and should not be attributed to the organizations with which they are affiliated.

ABSTRACT

After protracted and difficult negotiations, agreement was recently reached on the dimensions of a South African-EU free trade deal. Because of South Africa's prominence in the sub-region, implementation of this agreement will have an impact not only on South Africa, but on all the SADC economies. This paper traces how this impact may be felt over time, using a multi-region model constructed to focus on the determination of sectoral and geographic trade patterns. By separately modeling South Africa and the rest of southern Africa, the model can be used to evaluate how alternative SADC regional trade strategies can influence how the EU deal affects the region's economies; by distinguishing among major trading partners (EU, North America, East Asia), the simulations can help illuminate how the trade deal will likely affect current trade patterns

The empirical results lead to a number of conclusions: (1) trade creation dominates trade diversion for the region under all FTA arrangements; (2) the rest of southern Africa benefits from an FTA between the EU and South Africa — the recently signed bilateral agreement is not a “beggar thy neighbor” policy; (3) the rest of southern Africa gains more from zero-tariff access to EU markets than from a partial (50 percent) reduction in global tariffs; and (4) the South African economy is not large enough to serve as a growth pole for the region. Access to EU markets provides substantially bigger gains for the rest of southern Africa than does access to South Africa.

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AFTER THE NEGOTIATIONS: ASSESSING THE IMPACT OF FREE TRADE AGREEMENTS IN SOUTHERN AFRICA

1. Introduction

The conclusion of the Uruguay Round Agreement in 1994 and subsequent creation of the World Trade Organization unleashed a proliferation of overlapping preferential trade and/or integration initiatives in nearly all corners of the globe. At the same time in southern Africa, the emergence of South Africa from decades of isolation and confrontation, and its gradual re-integration into the regional and global economy, gave added impetus to this trend, and a variety of regional initiatives were initiated.

But despite this activity, tangible progress has been limited. Negotiation of a European Union (EU)-South Africa free trade agreement (FTA) was successfully completed in early 1999, but only after more than two years of difficult and contentious discussions. While the agreement should yield real benefits to the South African economy, they will be slow to emerge: the phasing in of South African access to EU markets will occur over ten years, while the reduction of South African tariffs on EU products will come over twelve years. Moreover, the EU agreement has placed strains on discussions now underway over formation of a free trade area within the Southern African Development Community (SADC), of which South Africa is a prominent member,[1] and raised questions regarding the continuing viability of the South African Customs Union (SACU) arrangement by which customs revenues are shared among South Africa and its smaller neighbors (Botswana, Lesotho, Namibia, and Swaziland).

While the eventual configuration of trade agreements in the region will be driven by a variety of political considerations as well as negotiated outcomes, it is also useful to provide some quantitative benchmarks against which different arrangements can be compared. This paper offers a preliminary empirical assessment of the impact on South Africa and the rest of southern Africa of the various regional integration and liberalization arrangements recently agreed to or currently under consideration:

(1) What is the impact of the EU-South Africa Free Trade Agreement (FTA) on trade welfare, and economic structure in South Africa and the rest of southern Africa?

(2) What are the gains to the rest of southern Africa of joining the EU- South Africa FTA and on what terms?

(3) Can South Africa serve as a growth pole for the region?

(4) How does a FTA with the EU, South Africa and the rest of southern Africa compare to the gains from global tariff reduction?

We approach these questions using a multi-country, computable general equilibrium (CGE) model to analyze the impact of trade liberalization on countries, sectors, and factors. Our model consist of eight linked country/region models: three in Africa (South Africa, rest of southern Africa, and rest of sub-Saharan Africa), and five others (European Union, High-Income Asia, Low-Income Asia, North America, and Rest of World). Each country model has seventeen sectors and two labor types, and is linked to all other countries through explicit modeling of bilateral trade flows for each traded sector.

We use the model to simulate a series of alternative scenarios, starting with the impact on the EU and South Africa of the recently signed FTA between those two countries. Then we consider the effects of expanding this agreement to include the rest of southern Africa, either by entering a parallel FTA with South Africa or by including all three countries in the FTA. Finally, we assess the effects of additional multi-lateral liberalization, either in conjunction

[1] The Southern African Development Community (SADC) includes Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.

with an FTA among the EU, South Africa, and the rest of southern Africa or independent of any regional agreements in the area.

It should be stressed that our empirical results should not be interpreted as "predicting" or "forecasting" what the different alternatives will bring. As will be evident, our representation of the different possible arrangements will be quite crude. For example, in the EU-South Africa free trade scenario, we assume all tariffs between the two economies are immediately set to zero, rather than phased in over time and with some exclusions; we also make no attempt to capture the other dynamic effects that should be associated with such an agreement, such as increased investment flows, changing production technologies, or skill upgrading. We focus instead on understanding the impact on trade, production, and resource allocation which might occur if different changes in tariff structures were imposed.

The next section provides an overview of the economic structure, trade linkages, and protection structure among the countries used in the model, while also introducing the data used in our model. Section three presents the main feature of the southern Africa CGE model. Section four presents the empirical results and section five presents the conclusions. An appendix contains a complete description of the model.

2. Economic Structure and Trade Patterns

Our southern Africa simulation model is constructed around an eight-region, seventeen-sector, five-factor, social accounting matrix (SAM) estimated for 1995.[2] This section outlines the structure of production, demand, income, taxation, and trade patterns in the base year for each economic region included in the model, and briefly describes the patterns of protection among the relevant regions.[3]

Table 1 presents data on factor endowments, intensities, and costs for the regions included in the model, and indicates the enormous differences in size, role of trade, factor endowments and factor cost among these regions. Within Africa, the economic prominence of South Africa is evident: It accounts for 43 percent of the GDP in the continent (an aggregate of rest of southern Africa, South Africa and rest of sub-Saharan Africa), and its GDP is almost nine times that of the rest of southern Africa. However, South Africa (and Africa in general) is small compared to other major trade partners for the region: GDP for the EU is over 50 times larger than that of South Africa.

The three African regions we identify in the model all have high trade dependencies, with exports and imports representing over 20 percent of GDP, with the rest of southern Africa having the highest dependency with trade shares that exceed 60 percent. Low-income Asia also has high trade dependencies. In contrast, the much larger OECD countries (EU, High-income Asia, and North America) depend on trade for only around 10 percent of GDP.

The African countries in our model all have higher shares of unskilled labor in the labor force, compared to the EU and other OECD countries (High-income Asia and North America).

International trade theory generally identifies two different types of international trade. Trade among developed industrial countries with similar endowments and technology is largely "intra-industry," with high exports and imports within sectors, whereas trade between high and low-income economies (with very different factor endowments and technological processes) is largely inter-industry, with more sectoral specialization.[4] With a tremendous range in factor endowments and income levels between southern African economies and other economies in the model, particularly the EU, there is ample scope for Heckscher-Ohlin forces (based on different factor endowments and comparative advantage theory) to influence trade.

[2] The data set is aggregated from the GTAP 1995 data set, version 4, which is described in Hertel (1997).

[3] For model regions that are made up of more than one national economy , all figures on exports and imports reported in these tables (and used in the model) refer to trade with economies *outside* that region, and thus exclude trade that occurs among members of the same region. In constructing the regional data sets, this "within region" trade is netted out and treated as another source of domestic demand.

[4] "Intra-industry" in this context refers to the two-way trade between industries which produce commodities that are similar in input requirements and highly substitutable in use, such as similar televisions manufactured by different producers.

Table 1: Factor Endowment, Income Shares, Factor Intensity, and Trade Dependencies in the Southern Africa Regional Model

	EU	High-income Asia	Low-income Asia	North America	Rest of southern Africa	Rest of sub-Saharan Africa	South Africa	Rest of World
GDP and Trade Flows (billion U.S. $):								
Exports	927.1	744.8	503.8	645.1	12.2	40.0	30.0	638.6
Imports	853.4	639.6	492.8	707.8	11.5	36.4	31.8	768.4
GDP	8215.3	6290.1	1799.3	8018.0	18.6	163.5	139.2	3733.4
Trade Dependence (percent):								
Export/GDP	11.2	11.8	28.3	8.0	66.0	24.7	21.7	17.0
Import/GDP	10.3	10.2	27.7	8.8	62.2	22.4	23.1	20.5
Factor Share in Region Value Added (percent):								
Land	0.3	0.8	7.0	0.5	3.9	3.3	0.6	2.1
Resources	0.4	0.4	2.4	0.7	6.3	6.7	0.8	2.6
Labor	66.8	57.4	42.6	62.5	47.4	51.6	60.7	50.0
Capital	32.6	41.4	48.0	36.3	42.4	38.5	37.8	45.3
Factor Proportions:								
Unskilled/total labor (percent)	61.6	62.7	79.4	60.6	79.8	83.1	67.4	69.3

Source: Southern Africa model database derived from GTAP data.

Table 2: Sectoral Export and Import Shares in World Trade

	EU	High-income Asia	Low-income Asia	North America	Rest of southern Africa	Rest of sub-Saharan Africa	South Africa	Rest of World	Total
Shares in World Exports:									
Primary Products	10.2	6.7	15.0	30.8	1.7	7.0	1.3	27.3	100.0
Energy & Mining	7.2	2.6	11.1	5.6	1.5	7.3	2.7	62.1	100.0
Food Processing	30.5	8.2	17.7	18.1	0.6	1.4	1.0	22.5	100.0
Textiles & Apparel	18.7	16.1	41.7	5.0	0.5	0.2	0.3	17.4	100.0
Other Manufacturing	28.8	28.7	11.3	17.9	0.1	0.2	0.7	12.4	100.0
Services	30.0	13.9	12.4	25.6	0.3	0.8	0.8	16.2	100.0
Total	26.2	21.0	14.2	18.2	0.3	1.1	0.8	18.0	100.0
Shares in World Imports:									
Primary Products	32.2	24.6	13.7	10.0	0.3	0.9	0.6	17.7	100.0
Energy & Mining	34.6	31.3	8.9	18.3	0.1	0.1	1.1	5.7	100.0
Food Processing	21.0	25.4	9.1	13.2	0.6	2.3	0.9	27.5	100.0
Textiles & Apparel	26.7	15.4	11.4	24.2	0.3	0.9	0.5	20.7	100.0
Other Manufacturing	21.1	16.0	17.3	22.1	0.3	1.2	1.0	21.1	100.0
Services	26.7	17.7	8.7	16.5	0.3	0.9	0.8	28.3	100.0
Total	24.1	18.1	13.9	20.0	0.3	1.0	0.9	21.7	100.0

Table 2 presents the share of each region's exports and imports in total world trade (from the base data used in the model).[5] Consistent with their low GDP levels, the African regions in our model represent relatively small shares of world trade. For example, the rest of southern Africa accounts for only 0.3 percent of total world exports. Its highest export shares are in primary products (1.7 percent of total world exports) and energy and mining (1.5 percent of total world exports). Similarly, South Africa accounts for 0.8 percent of total exports, with its highest export shares in energy and mining (2.7 percent), primary products (1.3 percent), and food processing (1.0 percent). In general, South Africa has a larger share of total exports than does the rest of southern Africa, with the exception being primary products (1.7 percent for the rest of southern Africa versus 1.3 percent for South Africa) and textiles and apparel (0.5 percent for the rest of southern Africa versus 0.3 percent for South Africa). In contrast, the EU accounts for 26 percent of total exports in the model, with a dominant role in food processing (31 percent), services (30 percent), and other manufacturing (29 percent).

Detailed data presented in Appendix Table A1 also reveal sizeable differences in structure and international comparative advantage among African countries, other developing countries (Low-income Asia and Rest of the World), and developed countries (EU, High-income Asia, and North America). The developed countries have a large service sector and sizable capital goods (machinery and equipment) and intermediate sectors. For the EU, these sectors account for 86 percent of total output. South African structure is more like the EU in that these sectors account for 79 percent of output. In contrast, these sectors account for only 55 percent of output in rest of southern Africa, the smallest share for all countries in the model. The rest of southern Africa has a high share of output in primary products (18 percent) while, for South Africa and the EU, the shares are 4 percent and 2 percent, respectively.[6]

Trade shares are consistent with intuition about international comparative advantage. For example, 40 percent of total exports from the EU are in capital goods, 17 percent are in intermediates, and 25 percent are in services. There is evidence of two-way trade as capital goods also account for 32 percent of total imports. Other important import sectors are energy and minerals (10 percent of total imports) and textiles and apparel (9 percent of total imports). This pattern is reversed for the rest of southern Africa — capital goods account for only 3 percent of total exports, services account for 16 percent while 30 percent is accounted for by energy and minerals and 11 percent by textiles and apparel. Primary products are also important export sectors for the rest of southern Africa, accounting for 17 percent of total exports. Basic intermediates and capital goods are important imports, representing for 17 percent and 36 percent of total imports, respectively. South Africa lies between these two extremes. Like the EU, intermediate goods account for 29 percent of total exports. Like natural-resource-rich rest of southern Africa, energy and minerals are also important exports and account for 23 percent of the total. Also like the rest of southern Africa, South Africa has a high import share of capital goods (43 percent).

The rest of southern Africa has the highest trade dependence, exporting 66 percent of GDP. Seven out of the seventeen sectors export more than 25 percent of production and three sectors export more than 60 percent of production, the highest being apparel which exports 82 percent. Two-way trade is substantial in that sector, as it also imports 45 percent of demand. Sectors with high import dependence are capital goods (60 percent of absorption), wood and paper (38 percent) and intermediates (36 percent). South Africa also has high trade dependence compared to developed countries such as the EU. Like the rest of southern Africa, this trade dependence is quite strong in certain sectors, with significant two-way trade. For example, it exports 38 percent of the grain it produces, and imports 45 percent of what it consumes; it exports 83 percent of the energy and minerals it produces, and imports 64 percent of demand.

Appendix Table A2 summarizes the sectoral net trade flows for the regions in the southern Africa model. The final line shows the trade surplus (+) or deficit (-). Asia (both high and low-income) and the EU have trade surpluses, matched by a trade deficit in North America and the rest of the world. South Africa has a slight trade deficit while the

[5]For presentation purposes, we aggregate the seventeen sectors in the model into the six sectors in this table. Aggregation of individual economies into regions for use in the model involved netting out trade among the combined economies, so that these data will not match data from other statistical sources on world trade volumes. Overall, trade among the African regions in the model accounts for only 2.2 percent of total trade.

[6]We define primary products as an aggregate of grain, fruit & vegetables, other agriculture, livestock and forestry & fisheries.

rest of southern Africa has a slight trade surplus. At the sectoral level, the EU has the highest net deficit in energy and minerals (-$68.4b) apparel (-$27.1b) and other agriculture (-$12.5b). It has a large net surplus in capital goods ($101.8b) and intermediates ($46.3b). The rest of southern Africa generates its biggest surplus in energy and minerals ($3.6b), other agriculture ($1.2b), and apparel ($0.9b). Its largest deficit is in capital goods (-$3.7b). Like the rest of southern Africa, South Africa has the biggest deficit in capital goods (-$10.6b) and its biggest net surplus in energy and minerals ($4.2b). However, it has a net deficit in apparel (-$0.04b).

Most general equilibrium analyses of regional economic liberalization focus on the removal of *ad valorem* equivalent price distortions against imports that arise from existing trade barriers and other sources. This is also the primary focus of the simulations conducted in this paper, since the pattern and degree of protection are important determinants of the impacts of trade liberalization. The larger the initial distortion, the greater the response to a particular policy change. Table 3 presents *ad valorem* import protection (tariff plus NTB) rates by sector and country of origin (omitting the nontraded service sectors) for the three regions (EU, South Africa, and rest of southern Africa) that are the main focus of our analysis. (Appendix Table 3 contains detailed sectoral data for all eight regions, along with other sectoral taxes and subsidies on exports and production).

Table 3: Sectoral Bilateral Import Tariffs and NTBs (Percent *ad valorem*)

	EU	High-income Asia	Low-income Asia	North America	Rest of southern Africa	Rest of sub-Saharan Africa	South Africa	Rest of World
EU								
Grain	0.0	14.2	38.3	10.9	1.6	10.9	4.8	6.4
Fruit & Vegetables	0.0	7.8	5.9	4.8	71.1	8.0	16.1	11.5
Other Agriculture	0.0	9.3	3.1	10.3	7.0	5.5	6.3	10.7
Livestock	0.0	0.6	1.7	27.9	1.1	1.0	0.1	24.0
Forestry & Fishery	0.0	5.4	6.4	1.9	7.6	2.0	7.2	2.1
Energy & Minerals	0.0	0.2	0.1	0.1	0.0	0.0	0.2	0.0
Food Processing	0.0	66.3	11.4	20.3	64.4	10.3	37.7	25.2
Textiles	0.0	6.6	6.3	6.9	5.9	5.9	4.3	4.0
Apparel	0.0	7.4	9.2	7.6	10.2	7.0	6.5	8.5
Wood & Paper	0.0	3.2	2.9	2.1	2.4	2.0	3.5	1.9
Basic Intermediates	0.0	4.3	5.4	3.5	2.5	2.9	2.7	2.0
Machinery & Equipment	0.0	4.9	4.9	3.5	4.6	3.2	3.3	2.1
Total	0.0	4.8	4.9	2.6	19.2	2.8	4.7	4.0
Rest of southern Africa								
Grain	13.6	25.8	21.9	7.4	0.0	-2.5	-6.0	15.4
Fruit & Vegetables	12.6	9.2	13.2	6.0	0.0	11.0	10.6	14.7
Other Agriculture	12.6	6.2	12.9	6.2	0.0	10.6	10.6	14.6
Livestock	13.2	0.0	5.1	2.4	0.0	4.7	4.7	11.1
Forestry & Fishery	8.8	12.3	7.7	12.0	0.0	6.0	9.4	10.0
Energy & Minerals	8.2	5.9	8.2	14.1	0.0	0.0	0.5	20.8
Food Processing	11.0	18.4	12.2	16.7	0.0	10.7	6.1	13.0
Textiles	17.1	19.6	17.0	14.7	0.0	25.5	25.5	12.2
Apparel	15.7	19.4	16.0	16.1	0.0	23.5	26.5	15.8
Wood & Paper	14.0	8.2	11.3	6.6	0.0	13.9	9.4	11.4
Basic Intermediates	10.4	10.0	9.9	8.0	0.0	7.0	5.3	4.8
Machinery & Equipment	7.3	10.8	7.4	4.9	0.0	6.3	4.9	9.7
Total	7.0	9.9	9.9	4.3	0.0	6.5	5.8	8.0
South Africa								
Grain	15.4	19.0	4.1	9.6	-0.6	-5.3	0.0	-0.6
Fruit & Vegetables	7.6	8.2	10.9	8.2	17.0	11.3	0.0	15.8
Other Agriculture	0.7	0.5	0.2	0.5	1.8	0.1	0.0	0.5
Livestock	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.8
Forestry & Fishery	0.0	0.0	1.7	0.0	1.2	0.0	0.0	1.3
Energy & Minerals	0.0	1.9	1.2	0.0	3.1	0.5	0.0	0.0
Food Processing	17.0	23.7	8.6	18.8	9.1	3.2	0.0	5.3
Textiles	8.0	15.9	12.7	16.5	10.2	2.4	0.0	20.3
Apparel	15.0	18.7	28.7	18.6	23.4	25.4	0.0	22.1
Wood & Paper	5.0	6.2	7.3	5.0	10.4	1.3	0.0	8.0
Basic Intermediates	2.8	7.7	12.6	4.0	9.8	4.6	0.0	3.8
Machinery & Equipment	6.2	13.7	9.1	5.3	10.7	5.8	0.0	5.4
Total	4.4	11.5	10.1	4.2	9.0	0.7	0.0	3.7

Note: Tariffs are for imports *from* column country *to* row country (EU, Rest of Southern Africa, and South Africa)

The import protection rates show substantial variation by sector and source of imports. South Africa protects grain, food processing, and textiles, with rates varying by trade partner. It has a trade-weighted average tariff of 9 percent against the rest of southern Africa while the average for imports from the EU is 4.4 percent. In contrast, the rest of southern Africa is more open to South Africa than to the EU, with a trade-weighted tariff of 5.8 percent for South Africa and 7 percent for the EU. The rest of southern Africa has high import protection for fruit and vegetables, other agriculture, textiles, and apparel. The EU protects fruit and vegetables with the highest tariffs being against the rest of southern Africa (71.l percent) and South Africa (16.1 percent). Tariff rates against fruit and vegetable imports from other countries are not as high, ranging from 4.8 percent to 11.5 percent. It also protects food processing, with a tariff of 64.4 percent against the rest of southern Africa and 37.7 percent against South Africa. The EU's trade weighted tariff against the rest of southern Africa is much higher (19.2 percent) than that for South Africa (4.7 percent) or any other region in the model. In terms of domestic taxes and subsidies (see Appendix Table 3), the EU provides a high subsidy to food processing, grain, and livestock exports. South Africa subsidizes most sectors in the economy, although the highest rate is only 1.1 percent, to grains. Both South Africa and the rest of southern Africa subsidize textile and apparel exports.

Table 4 (and Appendix Table 4) describes export market shares for the key regions being analyzed. Consistent with expectations from Heckscher-Ohlin trade theory, we find that both the rest of southern Africa and South Africa have the highest trade with developed countries, the EU, High-income Asia, and North America, with the EU being the biggest total export market for both countries. Countries in the region are much less important as export markets, with South Africa exporting only 8.3 percent of its total exports to the rest of southern Africa and the rest of southern Africa exporting only 3.5 percent of its total to South Africa. The dependency on the EU is quite high for both African countries in fruit and vegetables, food processing, textiles, and apparel. In contrast, EU trade appears to be predominantly with other developed countries, with the rest of southern Africa and South Africa accounting for only 0.4 percent and 1.5 percent of its exports, respectively.

Table 4: Export Market Shares

	EU	High-income Asia	Low-income Asia	North America	Rest of southern Africa	Rest of Sub Saharan Africa	South Africa	Rest of World	Total
EU									
Grain	0.0	5.1	18.4	1.3	1.8	6.2	1.3	65.8	100.0
Fruit & Vegetables	0.0	2.1	2.3	6.8	0.4	1.5	0.2	86.9	100.0
Other Agriculture	0.0	15.6	6.0	21.6	0.2	1.4	0.7	54.6	100.0
Livestock	0.0	17.2	13.5	6.6	0.1	0.6	0.8	61.2	100.0
Forestry & Fishery	0.0	21.6	9.2	3.9	0.4	13.8	0.4	50.7	100.0
Energy & Minerals	0.0	6.9	26.0	27.0	0.2	0.4	2.0	37.6	100.0
Food Processing	0.0	14.5	6.5	16.4	0.8	4.4	0.8	56.6	100.0
Textiles	0.0	11.6	7.8	11.9	0.7	2.2	1.1	64.8	100.0

Table 4: Export Market Shares

	EU	High-income Asia	Low-income Asia	North America	Rest of southern Africa	Rest of Sub Saharan Africa	South Africa	Rest of World	Total
Apparel	0.0	21.3	7.6	19.1	0.2	0.6	0.3	50.9	100.0
Wood & Paper	0.0	12.7	6.8	15.9	0.4	1.9	1.5	60.8	100.0
Basic Intermediates	0.0	15.1	9.8	20.9	0.3	2.5	1.6	49.9	100.0
Machinery & Equipment	0.0	15.0	14.3	22.5	0.5	2.2	1.9	43.6	100.0
Total	0.0	14.3	12.2	22.8	0.4	2.0	1.5	46.7	100.0
Rest of southern Africa									
Grain	10.0	22.9	5.6	0.2	0.0	7.2	35.0	19.0	100.0
Fruit & Vegetables	71.8	0.3	16.1	6.9	0.0	0.5	0.8	3.6	100.0
Other Agriculture	52.5	11.9	13.0	4.4	0.0	0.3	6.2	11.7	100.0
Livestock	16.9	14.7	37.2	1.8	0.0	1.8	7.6	20.0	100.0
Forestry & Fishery	60.7	27.4	3.4	2.4	0.0	1.7	2.6	1.8	100.0
Energy & Minerals	22.4	4.1	5.5	63.0	0.0	0.2	0.4	4.5	100.0
Food Processing	78.0	5.9	0.7	4.3	0.0	0.6	5.9	4.6	100.0
Textiles	62.6	2.8	6.7	5.2	0.0	7.9	12.4	2.4	100.0
Apparel	74.2	0.6	0.2	19.9	0.0	0.1	4.3	0.7	100.0
Wood & Paper	20.2	4.7	13.8	4.7	0.0	3.4	51.0	2.2	100.0
Basic Intermediates	25.9	25.6	22.1	12.7	0.0	0.9	3.1	9.6	100.0
Machinery & Equipment	34.0	4.5	4.4	11.8	0.0	2.9	14.9	27.5	100.0
Total	40.0	9.6	9.4	25.9	0.0	0.8	3.5	10.7	100.0
South Africa									
Grain	5.2	24.4	26.1	0.6	16.6	2.7	0.0	24.3	100.0
Fruit & Vegetables	59.0	12.1	1.8	9.8	3.4	1.1	0.0	12.7	100.0
Other Agriculture	49.4	9.1	12.2	4.7	6.5	0.9	0.0	17.2	100.0
Livestock	74.8	5.0	3.2	7.3	2.5	0.0	0.0	7.1	100.0
Forestry & Fishery	47.8	21.0	17.9	0.0	1.1	0.3	0.0	12.0	100.0
Energy & Minerals	48.7	15.1	5.6	3.2	1.2	0.2	0.0	26.0	100.0
Food Processing	43.5	17.3	3.8	7.0	14.7	4.4	0.0	9.2	100.0
Textiles	33.1	20.9	11.7	6.8	13.3	3.3	0.0	10.9	100.0
Apparel	41.9	11.6	1.4	36.0	5.4	1.5	0.0	2.1	100.0
Wood & Paper	40.8	22.0	13.9	5.5	9.0	2.9	0.0	6.0	100.0
Basic Intermediates	19.0	24.7	9.3	20.7	11.6	3.8	0.0	11.0	100.0
Machinery & Equipment	30.2	8.6	6.1	10.4	28.7	6.9	0.0	9.3	100.0
Total	32.3	19.6	7.5	11.3	8.3	2.4	0.0	18.5	100.0

3. Recent Literature

Regional Trade Agreements (RTAs)

There is considerable debate over the benefits of an RTA versus multilateral free trade. In theory, an RTA can both create and divert trade, or be purely trade diverting. Bhagwati and Panagariya (1996) and Panagariya (1998, 1996) emphasize the latter case, arguing that developing countries lose from an RTA because they have higher tariffs and depend more on potential RTA partners for trade. As a result, they experience large terms of trade losses from an RTA that diverts trade from the non-member, least-cost supplier.[7] The liberalizing country loses because it foregoes tariff revenue from the new union member but does not face a lower internal price for the imported good because the rest of the world determines its market price.

De Melo et al. (1993) note that the case of pure trade diversion, while unambiguously welfare-worsening, is too extreme a model to characterize actual RTAs.[8] They present a more balanced view of the welfare effects of an RTA in an analytical model in which integration both creates and diverts trade. In this case, the country which lowers its barriers against a trade partner faces a new domestic price which is lower than the tariff-inclusive mark-up over the constant cost supplier (the rest of the world), but higher than the free trade price. The welfare effects on the tariff-reducing country are ambiguous: it loses because it has diverted all imports from the lowest cost supplier, but it benefits because total imports have increased. De Melo and others note that, in this environment: (1) the higher the initial tariff on a given sector, the larger the benefits and the smaller the costs of an RTA; (2) the lower the post-RTA tariff on non-union countries, the less likely that the lower-priced goods of the latter will be displaced; and (3) the greater the complementarity in import demands between the union partner, the greater the gains from an RTA. Determining the net welfare impact of an RTA in this framework is an empirical issue.

Robinson and Thierfelder (1999) survey the empirical literature in which multi-country CGE models have been used to analyze the impact of regional trade agreements.[9] The multi-country CGE models differ widely in terms of country and commodity coverage, assumed market structure, policy detail, and specification of macroeconomic closure. In spite of these differences, surveys of these models support two general conclusions about the empirical effects of RTAs: (1) in aggregate, trade creation is always much larger than trade diversion; and (2) welfare — measured in terms of real GDP or equivalent variation — increases for member countries. The studies also show that there are welfare gains from expanding membership and that global tariff elimination increases welfare more than the formation of an RTA. Furthermore, in the search for large numbers, they find that features from new trade theory such as imperfect competition, increasing returns to scale, trade externalities, or dynamics generate big welfare gains, compared to models incorporating only neoclassical production structures.[10]

Trade Reform in Southern Africa

Other empirical studies of regional trade options for southern Africa consider issues similar to those addressed in this paper:

(1) What are trade creation and trade diversion effects of regional trade agreements (either with the EU or among SADC countries)?

(2) What impact do FTAs have on non-member countries in the region?

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[7] To illustrate the trade diversion effects of an RTA, they present Viner's model of a customs union in which two countries remove bilateral tariffs. When the rest of the world is the least cost supplier and faces constant costs, an RTA with the supplier who faces increasing costs can only divert trade.

[8] See also Winters (1996) and DeRosa (1998) for a discussion of models that allow both trade creation and diversion.

[9] While there is some overlap in the models included in these surveys, they draw conclusions from a total of 77 studies.

[10] They conclude with a discussion of another type of new link between increased trade and productivity — RTAs, which create reliable market access, will encourage finer specialization in production. The productivity gains from increased trade in this situation are Smithian rather than Ricardian.

(3) What effect do global tariff reductions, as agreed to in the Uruguay round, have on southern Africa?

CGE analysis of various FTAs in southern Africa emphasize changes in trade creation and diversion. Davies (1998) — using GTAP data and modeling framework — simulates a FTA between the EU and South Africa and finds strong potential trade diversion following an FTA.[11] Evans (1998) evaluates trade options for SADC countries — an FTA, a customs union, or open regionalism, by which SADC countries extend tariff reductions to all countries on a MFN basis. He finds that trade creation dominates trade diversion in an FTA as intra-SADC trade increases by 9 percent while trade with the ROW hardly changes. With free trade, there also trade creation as SADC trade expands by nearly 7 percent, but there are potential terms of trade costs. Under "high" export price elasticities, he finds that the welfare gain from free trade exceed those under an FTA.[12] Davies also describes the effect an FTA between South Africa and the EU has on the rest of southern Africa. He finds that the rest of southern Africa suffers as its trade volumes decline.[13]

Hertel et al. (1998) evaluate the effects on Africa of tariff reductions in manufactures, textile and clothing, and agriculture tariffs agreed to under the Uruguay Round. Like Davies, they use the GTAP data and modeling framework.[14] They find that the limited gains from the Uruguay Round in Africa are mainly due to the fact that Africa does not ease its trade restrictions as much as other countries, so world trade "bypasses the continent." Textiles and apparel will be hurt most by the Uruguay Round. In contrast there will be a slight expansion of production of cereals, non-grain crops, and forestry and fish products. The production increase in the latter two products is projected to be sold in Asia, suggesting exports will become more diversified, rather than concentrated in Europe. They then simulate domestic reforms in both the trade and transportation sector and in food grain productivity. They note that in both sectors, "Africa lags significantly behind other low-income countries, and institutional reforms could provide major gains at low cost" (p. 229).

4. The Southern Africa CGE Model

We analyze regional integration in southern Africa using a multi-country computable general equilibrium (CGE) model. Such models are designed to quantify many of the economic forces accompanying regional integration that are considered in international trade theory.[15] The southern Africa model we have developed is in the tradition of recent multi-country CGE models developed to analyze the impact of the Uruguay Round of GATT negotiations and the impact of the North American Free Trade Agreement.[16]

The model developed in this paper consists of a multi-regional CGE framework containing a seventeen sector, eight-region, general equilibrium model, where the regional CGE models are inter-connected through trade flows.[17] For

[11]He bases this conclusion on a discussion of pre-FTA tariff rates. Since South Africa had lower tariffs on the EU than other sources, he asserts that the other producers have lower costs so the FTA caused a switch from cheaper sources to the more expensive EU.

[12]However, these results are sensitive to export price elasticities. Under "low" export elasticities, welfare gains are higher with an FTA and there are actually welfare losses with free trade in SADC countries.

[13]As will be discussed below, we find that an FTA between the EU and South Africa actually helps the rest of southern Africa.

[14]Since tariffs will be reduced by 2005, they first project the model forward using growth rates in relative resource endowments (population, unskilled labor, capital stock, skilled labor and productivity). This becomes the base model.

[15] For a discussion of the analytic and modeling issues related to analysis of free trade areas, see Baldwin and Venables (1995), DeRosa (1998), and Winters (1996). Robinson and Thierfelder (1999) summarize the findings from empirical models of regional integration.

[16] These models, in turn, have built on multi-country models developed to analyze the impact of the Tokyo Round of GATT negotiations — in particular, the multi-country CGE model developed by Whalley (1985). See Hinojosa-Ojeda and Robinson (1992) and Brown (1992) for a review of NAFTA CGE models. Our model starts from the WALRAS model developed at the OECD to analyze the impact of the current GATT negotiations on the major OECD countries (OECD, 1990) and the RUNS model described in Goldin, Knudsen, and van der Mensbrugghe (1993). Starting from a single country model of the U.S., Robinson et al. (1993) expanded the model to include Mexico for analysis of NAFTA. Other versions of the model are described in Lewis, Robinson, and Wang (1995), Lewis and Robinson (1996), and Hinojosa-Ojeda, Lewis, and Robinson (1995).

[17] The model also permits regional interactions through endogenous migration of capital and labor, but for all experiments presented in this paper, this feature is not used. See Hinojosa-Ojeda, Lewis, and Robinson (1995) for analysis of a Greater North America Free Trade Area (GNAFTA) using a similar model that includes labor migration.

the purpose of describing the model, it is useful to distinguish between the individual "country" models and the multi-region model system as whole, which determines how the individual country models interact. When the model is actually used, the *within* country and *between* country relationships are solved simultaneously.

The model data base consists of social accounting matrices (SAMs) for each country, including data on their trade flows.[18] The development of a consistent multi-country data base is itself a major task; for our model, we rely on the latest release of the GTAP database [Hertel (1997)]. The SAM starts from multisectoral input-output data, which are expanded to provide information on the circular flow of income from producers to factors to "institutions," which include households, enterprises, government, a capital account, and trade accounts for each partner country, and for the rest of the world. These institutions represent the economic actors whose behavior and interactions are described in the CGE models. The parameter estimates for the sectoral production functions, consumer expenditure functions, import aggregation functions, and export transformation functions are estimated from base-year data and other econometric sources. The various parameters used in the model represent point estimates for the base year (1995) and the model was benchmarked so that its base solution replicates the base data.

Each sub-regional or "country" CGE model follows closely what has become a standard theoretical specification for trade-focused CGE models.[19] In addition to seventeen sectors for each country model, the model has five factors of production (two labor types, land, natural resources, and capital). For each sector, the model specifies output-supply and input-demand equations. Output supply is given by constant elasticity of substitution (CES) functions over value added, while intermediate inputs are demanded in fixed proportions. Profit-maximization by producers is assumed, implying that each factor is demanded so that marginal revenue product equals marginal cost. However, factors need not receive a uniform wage or "rental" (for non-labor factors) across sectors; sectoral factor market distortions are often imposed that fix the ratio of the sectoral return to a factor relative to the economywide average return for that factor.

In common with other CGE models, the model only determines relative prices and the absolute price level must be set exogenously. In our model, the aggregate consumer price index in each sub-region is set exogenously, defining the *numeraire*. The advantage of this choice is that solution wages and incomes are in real terms. The solution exchange rates in the sub-regions are also in real terms, and can be seen as equilibrium price-level-deflated (PLD) exchange rates, using the country consumer price indices as deflators.[20] We fix the exchange rate for North America, thereby defining the international *numeraire.* World prices are converted into domestic currency using the exchange rate, including any tax or tariff components. Cross-trade price consistency is imposed, so that the world price of country A's exports to country B are the same as the world price of country B's imports from country A.

Each "country" model traces the circular flow of income from producers, through factor payments, to households, government, and investors, and finally back to demand for goods in product markets. The country models incorporate tariffs which flow to the government, and non-tariff revenues which go to the private sector. Each economy is also modeled as having a number of domestic market distortions. There are sectorally differentiated indirect, consumption, and export taxes, as well as household and corporate income taxes. The single aggregate household in each economy demands commodities with fixed expenditure shares, consistent with optimization of a Cobb-Douglas utility function.

One implication of including these varied existing distortions, which capture in a stylized way institutional constraints characteristic of the economies, is that policy choices must be made in a second-best environment. In our simulations involving the establishment of FTAs, we are not considering scenarios which remove all existing distortions. Existing taxes and factor-market distortions are assumed to remain in place, along with existing import barriers against

[18] Social Accounting Matrices are described in Pyatt and Round (1985).

[19] Robinson (1989) surveys CGE models applied to developing countries. Shoven and Whalley (1984) survey models of developed countries. The theoretical properties of this family of trade-focused CGE models are discussed in Devarajan, Lewis, and Robinson (1990). A full presentation of the southern Africa CGE model appears in an appendix of this paper.

[20] De Melo and Robinson (1989) and Devarajan, Lewis, and Robinson (1993) discuss the role of the real exchange rate in this class of model.

the rest of the world. In this second-best environment, economic theory gives little guidance as to the welfare implications of forming a FTA.

Sectoral export-supply and import-demand functions are specified for each country. In common with other CGE models (both single and multi-country), the southern Africa CGE model specifies that goods produced in different countries are imperfect substitutes. At the sectoral level, in each country, demanders differentiate goods by country of origin and exporters differentiate goods by destination market. Composite demand is for a translog aggregation of sectoral imports and domestic goods supplied to the domestic market. Sectoral output is a CET (constant elasticity of transformation) aggregation of total supply to all export markets and supply to the domestic market. Allocation between export and domestic markets occurs in order to maximize revenue from total sales.

The rest of the world is treated like any other region in the model — with explicit production, consumption, and trade behavior in a separate regional CGE model. This is an extension of earlier versions of the model which represented the rest of the world as simply a supplier of imports to and demander of exports from the other model regions as a group. As the country coverage in the model expands — and correspondingly, the rest of the world shrinks — it is less plausible to build a model with an implicit "large" rest of the world. Instead, we allow downward sloping import demand for each region and upward sloping export supply curves from the rest of the world to each region.

For many single-country and multi-country models, a lack of detailed econometric work forced modelers to use simple functional forms, with few parameters, for the import-aggregation and export-transformation functions. The common practice is to use a constant elasticity of substitution (CES) function for the import aggregation equation, which is a very restrictive functional form and has led to empirical problems.[21] As a result of these limitations, modelers have begun to explore other formulations, while maintaining the fundamental assumption of product differentiation. In this model, we have used a flexible specification of the demand system called the almost ideal demand system (or AIDS).[22] The AIDS specification allows non-unitary income elasticities of demand for imports and also pairwise substitution elasticities that vary across countries.

We capture certain stylized features of labor markets in developing countries in the model. In South Africa and the rest of southern Africa, there is high unemployment, suggesting a readily available supply of labor. We therefore assume there is a fixed wage in these countries and that the labor supply is endogenous to clear the market. When sectors expand, they can meet labor demands at the given wage by attracting workers who were not in the labor market (as well as attracting workers from contracting sectors). For other countries and factors, we assume that factor markets (including labor) clear. In these markets, while sectoral employment changes, aggregate employment is held constant; instead, wages adjust.

The southern Africa CGE model, like other multi-country CGE models, has a medium to long-run focus. We report the results of comparative static experiments in which we "shock" the model by changing some exogenous variables and then compute the changed equilibrium solution. We do not explicitly consider how long it might take the economy to reach the new equilibrium, or what other adjustments (such as investment changes, technology transfer, productivity shifts, etc) might occur as well. The model's time horizon has to be viewed as "long enough" for full adjustment to occur, given the shock. While useful to understand the pushes and pulls the economies will face under the creation of an FTA, this approach has obvious shortcomings. In particular, it does not consider the costs of adjustment, such as transitional unemployment, that might occur while moving to the final equilibrium.

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[21] Armington (1969) used the specification in deriving import-demand functions, and the import aggregation functions are sometimes called Armington functions. Devarajan, Lewis, and Robinson (1990) discuss in detail the properties of single-country models which incorporate imperfect substitution. Brown (1987) analyzes the implications of using CES import aggregation functions in multi-country trade models. Others have criticized the use of the CES function on econometric grounds. See, for example, Alston *et al*. (1989).

[22] Hanson, Robinson, and Tokarick (1990) use the AIDS function in their 30-sector single-country CGE model of the U.S. They estimate the sectoral import demand functions using time-series data and find that sectoral expenditure elasticities of import demand are generally much greater than one in the U.S., results consistent with estimates from macroeconometric models.

Given the medium to long-run focus of the analysis, the model incorporates a simple macro closure that does not account for any short-run adjustment mechanisms (such as Keynesian multipliers). In each regional model, aggregate real investment and government consumption are assumed to be fixed proportions of aggregate GDP. The trade balance in each region is also assumed fixed (with the real exchange rate adjusting to equilibrate aggregate exports and imports), so domestic savings are assumed to adjust to achieve macro equilibrium.

Our model has a number of features that are different from a "standard" GTAP model (Hertel, 1997). First, the use of sectoral export supply functions in each regional model (using CET functions) provides a treatment on the export side that is symmetric with the treatment of imports as imperfect substitutes with domestically supplied goods (the "Armington assumption" for specifying import demand functions). The standard GTAP model only assumes imperfect substitutability on the import side, which implies that domestic prices of exportables are very sensitive to foreign demand and changes in world markets. For exploring trade liberalization scenarios, the resulting model tends to generate unrealistically large terms-of-trade changes.

Second, the use of AIDS rather than CES import demand functions allows a more flexible treatment of degrees of substitutability between goods originating from different types of countries. In a model focusing on trade with very poor developing countries, the more flexible functional form is especially useful. For example, in the U.S., the degree of substitutability between domestic machinery and machinery imported from the EU is likely to differ from the degree of substitutability with machinery imported from a developing country.

Third, the standard GTAP model specifies a macro closure in which regional trade balances vary endogenously. In our model, regional trade balances are assumed fixed. Specifying fixed trade balances seems better in a model focusing on the impact of trade liberalization, where it is desirable to abstract from issues of short-run macro adjustment.

Fourth, the standard GTAP model is specified as a linear approximation to a nonlinear CGE model and is solved in terms of rates of change. Our model is solved in levels and involves no approximation error. It is feasible to solve the GTAP model in levels, but it is often not done in applications.

Fifth, the standard GTAP model specifies the exchange rate as the *numeraire* in each regional CGE model, while we specify a consumer price index as *numeraire* in each region. Since all these models solve only for relative prices, the choice of *numeraire* is largely a matter of convenience. In models in which regional trade balances at equilibrium are not zero, it is important to note that they are defined in terms of the prices of the *numeraire* country (in our case, North America).

5. Southern Africa Model Results

Design of Alternative Scenarios

We present a series of scenarios in which trade becomes more liberalized. We begin with a FTA scenario between the EU and South Africa, in which we eliminate *all* bilateral tariffs and non-tariff barriers. We then consider membership options for the rest of southern Africa — either through a parallel FTA with South Africa (similar to a SADC FTA), where South Africa is the hub in a hub-and-spoke model, or as an equal partner in a trilateral FTA with the EU as well. Finally, we compare the benefits of expanding the trilateral FTA with a global tariff reduction versus global tariff reduction alone.

Table 5: Macro and Trade Performance Results for EU-South Africa FTA

	Percentage Change from Base						
	Real GDP	Real Absorption	Real Exchange Rate	Terms of Trade	Export/ Output Share	Skilled Labor	Unskilled Labor
EU	0.000	0.002	-0.011	0.011	0.002		
High-income Asia	0.000	0.000	0.003	0.002	0.000		
Low-income Asia	0.000	0.001	-0.001	0.003	0.000		
North America	0.000	0.000	0.000	0.002	0.000		
Rest of southern Africa	0.077	0.130	0.129	0.078	0.000	0.136	0.177
Rest of sub-Saharan Africa	0.001	0.004	-0.001	0.015	0.000		
South Africa	0.436	0.305	0.529	-0.591	0.132	0.471	0.807
Rest of World	0.000	0.001	-0.003	0.004	0.000		

	Billion US $			*Percentage Change from Base*		
	Trade Expansion	Trade Creation	Trade Diversion	Trade Expansion	Trade Creation	Trade Diversion
EU	0.626	0.609	0.017	0.067	4.272	0.002
High-income Asia	-0.017	-0.022	0.005	-0.002	-0.014	0.001
Low-income Asia	0.005	0.009	-0.004	0.001	0.007	-0.001
North America	0.006	0.009	-0.003	0.001	0.004	-0.001
Rest of southern Africa	0.001	0.001	0.000	0.009	0.019	0.002
Rest of sub-Saharan Africa	0.002	0.002	0.000	0.004	0.008	-0.001
South Africa	0.554	0.538	0.016	1.848	5.552	0.078
Rest of World	0.028	0.034	-0.006	0.004	0.010	-0.002

EU-South Africa FTA

We find that an FTA between the EU and South Africa has a much bigger impact on South Africa than on the EU. South African real GDP increases by 0.44 percent and real absorption increases by 0.31 percent, whereas there are only negligible changes for the EU (Table 5). These lopsided gains reflect differences in both trade dependence and the bilateral tariff structure. South Africa is heavily dependent on EU export markets, with 32 percent of total exports going to the EU. The dependence is especially strong for commodities such as livestock (75 percent), fruits and vegetables (59 percent), other agriculture (49 percent), and food processing (44 percent). In contrast, only 1.5 percent of EU exports go to South Africa, with the largest share at 2.0 percent in the energy and mineral sector (see Table 4). The EU also has high tariffs against certain products from South Africa. For example, the tariff on food processing is 38 percent and on fruit & vegetables it is 16 percent. While South Africa also has high tariffs on grains, food processing, and apparel from the EU (15-17 percent), the tariffs against all other goods are less than 8 percent.

The GDP gains for South Africa also reflect an expansion of the labor supply as the supply of skilled labor increases by 0.47 percent and the supply of unskilled labor increases by 0.81 percent (Table 5). South Africa's terms-of-trade worsen slightly as the increase in demand for imports from the EU raises the price it faces.

Trade expands for all regions except high-income Asia which experiences a tiny decline of 0.002 percent. Trade creation dominates trade diversion in all regions except high-income Asia whose total exports to South Africa

decline by .81 percent (not tabulated). For the EU and South Africa, there is no trade diversion, as trade with the FTA partner and with other countries both increase; there is only relative trade creation as trade with FTA partners increases by more than trade with other countries.

The sectoral gains from the EU-South Africa FTA appear in Appendix Table 5. While total exports from South Africa to the EU increase by 5.3 percent, there are large gains in formerly protected sectors. For example, exports of fruit and vegetables increase by 19.5 percent and food processing by 46.2 percent. Exports from the EU to South Africa increase by 4.3 percent with the biggest gains in grains (23.4 percent), food processing (19.8 percent), and apparel (11.9 percent).

We find that the rest of southern Africa also benefits from the bilateral FTA between EU and South Africa, although the gains are slight. Its real GDP and real absorption increase by 0.1 percent. Its exports to the EU increase by .01 percent and its exports to South Africa increase by 0.1 percent. The economy absorbs more labor as demand for skilled labor increases by 0.1 percent and demand for unskilled labor increases by 0.2 percent.

Southern Africa FTAs

We consider two options for southern Africa when liberalizing trade in the region. It can either establish an FTA with South Africa, parallel to the EU-South Africa FTA, or it can also liberalize with the EU, forming a trilateral FTA. Our results suggest that the EU is more important than South Africa for trade and growth in the rest of southern Africa — it gains far more from a trilateral FTA. Its real GDP and real absorption increase by 4.1 percent and 4.3 percent respectively with a trilateral agreement (Table 7). In contrast, its real GDP increases only by 0.33 percent when it forms an FTA with South Africa alone; its real absorption actually declines by 0.1 percent (Table 6). There are also dramatic differences in labor market effects. When the rest of southern Africa forms an FTA with South Africa, employment increases by 0.7 percent for skilled labor and by 0.9 percent for unskilled labor. In contrast, a trilateral FTA expands employment by 5.7 percent for skilled labor and 11.3 percent for unskilled labor. Interestingly, there are greater spillover effects for South Africa in terms of real GDP and real absorption growth under a trilateral FTA than as the hub for the other countries.

Table 6: Macro and Trade Performance Results for EU-South Africa & SADC FTA

	Percentage Change from Base						
	Real GDP	Real Absorption	Real Exchange Rate	Terms of Trade	Export/ Output Share	Skilled Labor	Unskilled Labor
EU	0.001	0.002	-0.010	0.015	0.002		
High-income Asia	0.000	0.000	0.004	0.003	0.000		
Low-income Asia	0.000	0.001	0.002	0.003	0.000		
North America	0.000	0.000	0.000	0.004	0.000		
Rest of southern Africa	0.336	-0.079	1.164	-0.611	0.169	0.666	0.866
Rest of sub-Saharan Africa	0.001	0.004	0.002	0.015	0.000		
South Africa	0.529	0.415	0.350	-0.497	0.141	0.577	0.960
Rest of World	0.000	0.001	-0.002	0.005	0.000		
		Billion US $		*Percentage Change from Base*			
	Trade Expansion	Trade Creation	Trade Diversion	Trade Expansion	Trade Creation	Trade Diversion	
EU	0.620	0.608	0.012	0.067	3.301	0.001	
High-income Asia	-0.021	-0.020	-0.001	-0.003	-0.013	0.000	
Low-income Asia	-0.006	0.000	-0.006	-0.001	0.000	-0.002	
North America	0.004	0.010	-0.007	0.001	0.005	-0.002	
Rest of southern Africa	0.051	0.049	0.002	0.419	0.916	0.036	
Rest of sub-Saharan Africa	0.001	0.001	-0.001	0.001	0.005	-0.003	
South Africa	0.680	0.668	0.012	2.266	5.475	0.067	
Rest of World	0.025	0.034	-0.010	0.004	0.010	-0.003	

As is the case in the bilateral FTA between South Africa and the EU, the rest of southern Africa is heavily dependent on the EU as an export market. Indeed, the rest of southern Africa is even more dependent on the EU than is South Africa, with 40 percent of its total exports going to the EU. The dependence is quite strong for certain sectors such as food processing (78 percent), apparel (74.2 percent), fruit and vegetables (71.8 percent), and forestry and fishery (60.7 percent) (Table 4). In contrast, only 3.5 percent of total exports from the rest of southern Africa go to South Africa, with heavy dependence in wood and paper (51 percent) and grain (35 percent). South Africa depends more on the rest of southern Africa for its export sales, with 8.3 percent of total exports going to the rest of southern Africa.

The rest of southern Africa also faces high tariffs in the EU, with a trade-weighted average tariff of 19 percent. Tariffs are particularly high in fruit and vegetables (71 percent) and food processing (64 percent).

Table 7: Macro and Trade Performance Results for EU-SADC (South Africa & Other Southern Africa) FTA

	Percentage Change from Base						
	Real GDP	Real Absorption	Real Exchange Rate	Terms of Trade	Export/ Output Share	Skilled Labor	Unskilled Labor
EU	0.002	-0.001	0.042	-0.023	0.007		
High-income Asia	0.000	0.000	-0.002	0.002	0.000		
Low-income Asia	0.001	0.006	-0.024	0.020	-0.001		
North America	0.000	0.000	0.000	0.001	0.000		
Rest of southern Africa	4.048	4.372	-2.955	-0.548	0.252	5.674	11.295
Rest of sub-Saharan Africa	0.002	0.012	-0.023	0.043	-0.001		
South Africa	0.625	0.566	-0.133	-0.244	0.139	0.691	1.116
Rest of World	0.001	0.005	-0.006	0.025	0.000		

		Billion US $		*Percentage Change from Base*		
	Trade Expansion	Trade Creation	Trade Diversion	Trade Expansion	Trade Creation	Trade Diversion
EU	1.394	1.287	0.107	0.150	6.986	0.012
High-income Asia	0.046	0.005	0.040	0.006	0.004	0.007
Low-income Asia	0.095	0.074	0.021	0.019	0.060	0.006
North America	0.033	0.006	0.026	0.005	0.003	0.006
Rest of southern Africa	1.179	1.181	-0.001	9.684	22.283	-0.022
Rest of sub-Saharan Africa	0.009	0.005	0.004	0.024	0.026	0.021
South Africa	0.851	0.840	0.011	2.839	6.888	0.063
Rest of World	0.063	0.027	0.036	0.010	0.008	0.012

In either type of FTA — hub-and-spoke with South Africa the hub, or trilateral FTA — there is no absolute trade diversion for member countries; trade expands to all regions, with trade to FTA partners increasing relatively more. When there is a hub-and-spoke arrangement, high-income Asia and low-income Asia experience slight contractions in trade, 0.02 percent and 0.01 percent respectively. Exports from all countries/regions in the model expand in the trilateral FTA and only the rest of southern Africa has slight trade diversion.

Both South Africa and the rest of southern Africa experience terms-of-trade losses with either type of FTA. The EU has terms of trade gains with a bilateral South Africa FTA and with the hub-and-spoke arrangement. However, it has a slight terms-of-trade loss with a trilateral FTA.

Table 8: Macro and Trade Performance Results for EU-SADC FTA & 50 Percent Global Trade Liberalization

	Percentage Change from Base						
	Real GDP	Real Absorption	Real Exchange Rate	Terms of Trade	Export/ Output Share	Skilled Labor	Unskilled Labor
EU	0.010	0.123	0.367	1.040	0.070		
High-income Asia	0.130	0.218	0.758	0.816	0.103		
Low-income Asia	0.108	-0.883	5.467	-3.302	0.637		
North America	0.006	0.114	0.000	1.191	0.059		
Rest of southern Africa	5.101	5.185	-0.557	-0.863	0.460	7.295	13.793
Rest of sub-Saharan Africa	0.091	-0.345	5.156	-1.645	0.467		
South Africa	1.219	1.087	1.419	-0.617	0.262	1.321	2.130
Rest of World	0.053	-0.077	2.696	-0.792	0.240		
		Billion US $		*Percentage Change from Base*			
	Trade Expansion	Trade Creation	Trade Diversion	Trade Expansion	Trade Creation	Trade Diversion	
EU	14.739	1.043	13.696	1.589	5.665	1.507	
High-income Asia	15.599	3.920	11.679	2.094	2.597	1.966	
Low-income Asia	8.120	1.855	6.264	1.611	1.507	1.645	
North America	12.107	2.792	9.316	1.876	1.249	2.209	
Rest of southern Africa	1.230	1.148	0.082	10.100	21.664	1.192	
Rest of sub-Saharan Africa	0.489	0.261	0.228	1.220	1.296	1.142	
South Africa	1.088	0.770	0.318	3.628	6.311	1.789	
Rest of World	11.241	5.268	5.973	1.759	1.534	2.020	

Global Tariff Reductions

Next, we consider the importance of a regional FTA versus global tariff reduction. To isolate the importance of the trilateral FTA to member countries, we simulate a global tariff reduction of fifty percent both alone (Table 9) and in conjunction with the trilateral FTA between the EU, South Africa, and the rest of southern Africa (Table 8). The rest of southern Africa does better with a trilateral FTA than with a global tariff reduction, with real GDP increasing by 4.1 percent rather than 2.7 percent. In contrast, both South Africa and the EU have higher real GDP and real absorption growth with global tariff reduction than with the trilateral FTA. The rest of southern Africa is so dependent on trade with the EU that the 100 percent tariff reduction from the FTA exceeds gains it could get when all countries (including the EU) reduce tariffs by fifty percent. A trilateral FTA also expands exports for South Africa and the rest of southern Africa more than global tariff reduction, reflecting the importance of the EU, and hence the 100 percent reduction in its tariffs under the FTA. Expanding the FTA to include 50 percent global tariff reduction to non-member countries yields the highest gains for all FTA countries, with the biggest gains to the rest of southern Africa and South Africa.

Table 9: Macro and Trade Performance Results for 50 Percent Global Trade Liberalization

	Percentage Change from Base						
	Real GDP	Real Absorption	Real Exchange Rate	Terms of Trade	Export/ Output Share	Skilled Labor	Unskilled Labor
EU	0.009	0.126	0.338	1.058	0.066		
High-income Asia	0.130	0.218	0.760	0.816	0.103		
Low-income Asia	0.108	-0.887	5.485	-3.314	0.637		
North America	0.006	0.114	0.000	1.192	0.059		
Rest of southern Africa	2.724	2.453	1.635	-0.663	0.360	3.953	6.912
Rest of sub-Saharan Africa	0.090	-0.353	5.174	-1.670	0.468		
South Africa	0.875	0.759	1.617	-0.546	0.192	0.937	1.512
Rest of World	0.053	-0.081	2.700	-0.807	0.240		
		Billion US $			*Percentage Change from Base*		
	Trade Expansion	Trade Creation	Trade Diversion	Trade Expansion	Trade Creation	Trade Diversion	
EU	13.948			1.504			
High-income Asia	15.564			2.089			
Low-income Asia	8.055			1.598			
North America	12.086			1.873			
Rest of southern Africa	0.507			4.159			
Rest of sub-Saharan Africa	0.482			1.203			
South Africa	0.606			2.020			
Rest of World	11.203			1.753			

The EU has terms-of-trade gains with global tariff reduction, with and without the FTA with South Africa and the rest of southern Africa. In contrast, South Africa and the rest of southern Africa have terms-of-trade losses in all scenarios.

The sectoral gains differ with the type of trade liberalization (see Table 10). Consider the impact of a trilateral regional trade agreement (EU, the rest of southern Africa, and South Africa) and global tariff reduction of 50 percent. Grain output in South Africa expands much more under global tariff reduction — 12.4 percent versus 1.3 percent under a trilateral FTA. This is because countries outside the RTA heavily protect grain. For example High-income Asia has a tariff of 295.2 percent tariff on grain imports from South Africa (with similarly high tariffs against grain imports for the EU and North America). Low-income Asia also has high tariffs (136.8 percent) against grain from South Africa, in contrast to the tariffs on grain imports from other major producers, the EU and North America. The disparity in sectoral results is less dramatic for manufacturing and services which are slightly better off under global tariff reduction.

Table 10: Sectoral Output Changes

	EU-SADC FTA			50 Percent Global Trade Liberalization		
	EU	Rest of Southern Africa	South Africa	EU	Rest of Southern Africa	South Africa
	percent change from base			percent change from base		
Grain	0.052	9.053	1.279	-0.690	4.152	12.430
Fruit & Vegetables	-0.340	23.838	3.585	0.067	11.091	3.910
Other Agriculture	-0.018	2.875	2.133	-0.494	4.493	1.661
Livestock	6.261454e-04	7.715	2.114	0.522	4.411	2.043
Forestry & Fishery	-0.016	5.701	4.165	-0.029	3.500	2.745
Energy & Minerals	0.059	-1.531	0.012	0.268	-0.314	0.569
Food Processing	-0.003	28.425	2.542	0.679	13.401	2.215
Textiles	0.034	3.087	1.622	0.683	2.202	1.243
Apparel	0.011	4.613	1.399	1.022	5.240	1.350
Wood & Paper	0.007	0.663	0.849	0.008	1.157	1.191

Basic Intermediates	0.021	0.043	0.685	0.093	1.751	1.192
Machinery & Equipment	0.032	0.603	0.023	0.024	1.201	0.187
Utility	-0.009	2.275	0.605	0.033	1.958	0.864
Construction	-0.001	0.760	0.043	-0.023	0.460	0.062
Trade	-0.004	2.925	0.558	-0.096	1.984	0.771
Dwellings	-0.008	2.393	0.587	-0.058	1.543	0.798
Public	-0.002	0.579	0.058	-0.041	0.673	0.073

In the rest of southern Africa, there is also a difference in the effects of an RTA versus global tariff reduction. Most agricultural sectors (particularly fruits and vegetables) and food processing expand more with a trilateral FTA while manufacturing (apparel, wood & paper, basic intermediates, and machinery & equipment) gains slightly more under global tariff reductions.

For the EU, grains expand slightly with an RTA and decline slightly with global tariff reduction. However, food processing output declines under an RTA and expands under global tariff reduction, reflecting the high tariffs on food processing products from South Africa and the Rest of southern Africa. Textile and apparel also benefit more from global tariff reduction than with an RTA as output expands further.

6. Conclusions

We have developed a multi-country model that focuses on southern Africa to analyze the impact on African economies of both regional and global tariff reductions. The model is used as a simulation laboratory to sort out the relative empirical importance of different types of trade liberalization. The empirical results lead to a number of conclusions:

- Trade creation dominates trade diversion for the region under all FTA arrangements.
- The rest of southern Africa benefits from an FTA between the EU and South Africa — the recently signed bilateral agreement is not a "beggar thy neighbor" policy.
- The rest of southern Africa gains more from zero-tariff access to EU markets than from a partial (50 percent) reduction in global tariffs.
- The South African economy is not large enough to serve as a growth pole for the region. Access to EU markets provides substantially bigger gains for the rest of southern Africa than does access to South Africa.

As preparations are underway for the Millenium Round trade negotiations, the results suggest some implications about the region's priorities:

- Southern Africa should work hard to get access to EU markets, as this appears potentially more important than global liberalization (which will likely be less than the 50 percent global reduction simulated here) for real GDP growth in those countries.
- However, certain sectors in southern Africa will benefit more from global tariff reductions than from a trilateral FTA between the EU, South Africa, and the rest of southern Africa. In South Africa, grain production expands substantially more under global tariff reduction; manufactured goods also expand further under global tariff reductions, but the difference is not as dramatic.
- In the rest of southern Africa, tension may arise between agriculture and manufacturing sectors as most agriculture and food processing expand more under a trilateral FTA than with global tariff reduction; manufactured goods expand further with global tariff reduction.

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Appendix Table 1: Structure of Production, Factor Income, Demand and Trade Patterns for Southern Africa Regions

	Sectoral Composition (percent)					Ratios (percent)		Factor Composition of Value Added (percent)			
	Output	Value added	Final Demand	Imports	Exports	Exports/ Output	Imports/ Absorption	Land	Resources	Labor	Capital
EU											
Grain	0.2	0.5	0.0	0.8	0.3	9.2	15.4	12.1	0.0	67.1	20.8
Fruit & Vegetables	0.4	0.6	0.5	1.1	0.3	4.1	12.1	12.0	0.0	67.7	20.3
Other Agriculture	0.3	0.4	0.3	1.9	0.4	9.2	29.6	11.6	0.0	67.1	21.3
Livestock	1.1	1.0	0.3	0.5	0.3	2.2	2.5	12.7	0.0	66.6	20.7
Forestry & Fishery	0.3	0.4	0.2	0.5	0.1	1.6	7.5	0.0	24.2	32.3	43.5
Energy & Minerals	0.7	0.7	0.1	10.1	1.9	15.4	47.3	0.0	36.1	26.1	37.8
Food Processing	5.3	3.1	6.8	3.5	4.7	6.1	3.5	0.0	0.0	62.6	37.4
Textiles	1.0	0.7	0.8	2.1	2.5	14.2	11.4	0.0	0.0	73.4	26.6
Apparel	1.1	0.9	2.1	6.4	3.0	14.6	25.0	0.0	0.0	72.8	27.2
Wood & Paper	3.4	2.8	2.0	3.7	3.9	6.4	5.7	0.0	0.0	77.9	22.1
Basic Intermediates	9.1	6.0	3.1	13.3	17.3	10.7	7.9	0.0	0.0	70.5	29.5
Machinery & Equipment	14.1	11.6	14.5	31.8	40.3	16.1	12.3	0.0	0.0	80.5	19.5
Utility	2.0	2.0	1.5	0.1	0.2	0.5	0.3	0.0	0.0	42.0	58.0
Construction	6.5	5.9	9.5	0.2	1.0	0.8	0.2	0.0	0.0	68.8	31.2
Trade	15.3	18.3	16.5	11.8	11.8	4.3	4.0	0.0	0.0	64.9	35.1
Dwellings	26.8	29.3	22.5	7.6	8.9	1.9	1.5	0.0	0.0	51.2	48.8
Public	12.3	15.9	19.3	4.6	3.3	1.5	2.0	0.0	0.0	89.5	10.5
Total											
High Income Asia											
Grain	0.7	1.3	0.0	1.5	0.1	1.2	8.2	27.3	0.0	48.1	24.5
Fruit & Vegetables	0.9	1.3	1.0	0.5	0.2	1.3	3.1	25.5	0.0	49.0	25.6
Other Agriculture	0.1	0.1	0.1	1.3	0.2	14.7	46.2	27.2	0.0	49.4	23.5
Livestock	0.8	0.5	0.2	0.5	0.5	4.1	3.2	23.5	0.0	51.1	25.4
Forestry & Fishery	0.7	0.8	0.3	1.1	0.1	0.8	7.2	0.0	32.7	34.0	33.3
Energy & Minerals	0.5	0.6	0.0	12.2	0.9	10.3	57.9	0.0	23.4	30.9	45.7
Food Processing	6.4	2.6	8.8	5.6	1.6	1.6	4.5	0.0	0.0	56.0	44.0
Textiles	1.3	0.8	0.4	1.9	4.1	19.4	8.6	0.0	0.0	68.8	31.2
Apparel	1.3	0.8	2.3	4.7	1.8	8.7	17.2	0.0	0.0	74.1	25.9
Wood & Paper	3.5	2.6	1.2	4.4	1.3	2.2	6.2	0.0	0.0	66.4	33.6
Basic Intermediates	11.2	7.3	2.2	14.2	12.7	6.9	6.6	0.0	0.0	46.0	54.0
Machinery & Equipment	16.0	11.6	15.3	30.8	62.0	23.5	11.6	0.0	0.0	59.1	40.9
Utility	3.6	4.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	27.6	72.4
Construction	9.5	7.8	17.1	0.0	0.1	0.1	0.0	0.0	0.0	69.9	30.1
Trade	18.2	22.3	19.6	13.0	11.0	3.7	3.7	0.0	0.0	70.8	29.2
Dwellings	19.2	25.6	18.1	6.4	2.4	0.8	1.7	0.0	0.0	38.1	61.9
Public	6.1	9.9	11.2	2.0	1.0	1.0	1.7	0.0	0.0	89.0	11.0

Appendix Table 1: Structure of Production, Factor Income, Demand and Trade Patterns for Southern Africa Regions

	Sectoral Composition (percent)					Ratios (percent)		Factor Composition of Value Added (percent)			
	Output	Value added	Final Demand	Imports	Exports	Exports/ Output	Imports/ Absorption	Land	Resources	Labor	Capital
Low Income Asia											
Grain	3.9	6.7	4.1	1.2	0.2	0.6	3.7	40.5	0.0	46.0	13.5
Fruit & Vegetables	2.6	4.5	3.1	0.5	0.5	2.7	2.5	38.0	0.0	49.8	12.1
Other Agriculture	1.5	2.6	1.0	1.0	2.3	19.5	9.0	41.4	0.0	46.1	12.5
Livestock	3.1	3.9	4.2	0.5	0.3	1.1	2.1	36.9	0.0	49.9	13.1
Forestry & Fishery	1.7	3.2	1.8	0.3	0.4	3.0	2.5	0.0	20.7	33.4	45.9
Energy & Minerals	3.7	5.1	0.4	4.5	5.5	19.1	16.1	0.0	33.8	22.1	44.1
Food Processing	6.3	3.3	8.8	2.6	5.0	11.2	5.6	0.0	0.0	31.8	68.2
Textiles	4.2	2.3	3.3	4.9	4.5	14.2	14.0	0.0	0.0	50.0	50.0
Apparel	3.6	2.1	2.0	1.4	18.0	66.3	12.7	0.0	0.0	45.8	54.2
Wood & Paper	2.5	1.8	1.2	2.3	3.6	19.0	12.6	0.0	0.0	41.4	58.6
Basic Intermediates	12.1	6.7	3.6	20.6	7.9	9.1	18.8	0.0	0.0	32.3	67.7
Machinery & Equipment	13.9	9.4	17.1	46.4	32.7	29.4	35.3	0.0	0.0	35.6	64.4
Utility	3.3	3.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	30.3	69.7
Construction	8.1	6.2	17.7	1.6	0.1	0.2	2.5	0.0	0.0	57.9	42.1
Trade	17.1	21.1	13.5	6.1	14.3	11.0	4.9	0.0	0.0	41.8	58.2
Dwellings	6.9	10.0	6.6	3.9	3.3	6.3	7.2	0.0	0.0	38.7	61.3
Public	5.3	8.2	10.3	2.2	1.4	3.5	5.2	0.0	0.0	65.4	34.6
North America											
Grain	0.7	0.7	0.1	0.0	3.5	24.3	0.3	26.9	0.0	39.1	34.1
Fruit & Vegetables	0.3	0.4	0.4	0.5	0.6	8.6	7.5	27.4	0.0	40.8	31.8
Other Agriculture	0.2	0.2	0.1	1.1	1.0	20.9	23.7	27.8	0.0	38.8	33.4
Livestock	1.0	0.4	0.1	0.1	0.4	2.0	0.5	26.7	0.0	40.1	33.1
Forestry & Fishery	0.4	0.3	0.1	0.1	0.4	4.4	1.0	0.0	20.9	28.8	50.3
Energy & Minerals	1.6	1.8	0.0	6.4	2.2	6.2	18.2	0.0	34.4	20.8	44.8
Food Processing	4.6	2.9	5.2	2.6	4.0	4.1	3.0	0.0	0.0	41.1	58.9
Textiles	1.0	0.6	0.5	1.4	1.0	5.1	7.3	0.0	0.0	63.2	36.8
Apparel	1.0	0.8	2.0	7.9	1.1	4.9	28.7	0.0	0.0	63.0	37.0
Wood & Paper	3.9	3.1	1.9	2.1	4.6	5.6	2.9	0.0	0.0	60.7	39.3
Basic Intermediates	7.8	5.1	2.8	12.0	12.5	7.4	7.9	0.0	0.0	53.5	46.5
Machinery & Equipment	13.7	10.9	14.0	47.6	37.9	12.9	17.0	0.0	0.0	67.6	32.4
Utility	2.7	2.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	31.5	68.5
Construction	7.3	6.3	10.0	0.1	0.0	0.0	0.0	0.0	0.0	67.4	32.6
Trade	18.6	20.6	21.1	8.4	15.3	3.6	2.4	0.0	0.0	70.4	29.6
Dwellings	24.1	27.1	21.9	7.5	11.6	2.1	1.6	0.0	0.0	45.8	54.2
Public	11.1	16.1	17.7	2.3	3.8	1.6	1.1	0.0	0.0	95.0	5.0

Appendix Table 1: Structure of Production, Factor Income, Demand and Trade Patterns for Southern Africa Regions

	Sectoral Composition (percent)					Ratios (percent)		Factor Composition of Value Added (percent)			
	Output	Value added	Final Demand	Imports	Exports	Exports/ Output	Imports/ Absorption	Land	Resources	Labor	Capital
Rest of Southern Africa											
Grain	4.4	7.1	6.1	1.8	0.3	2.4	11.0	15.1	0.0	60.0	24.9
Fruit & Vegetables	4.9	8.3	3.9	0.8	5.3	32.4	6.7	15.1	0.0	60.0	25.0
Other Agriculture	4.4	7.0	1.4	0.4	10.2	66.3	7.7	15.0	0.0	60.0	25.0
Livestock	2.9	3.6	4.1	0.2	0.3	2.3	1.9	15.1	0.0	60.0	24.9
Forestry & Fishery	1.4	2.4	1.1	0.1	1.3	29.3	3.3	0.0	26.5	40.0	33.5
Energy & Minerals	11.0	13.6	0.1	1.2	30.4	62.2	7.7	0.0	41.7	9.0	49.3
Food Processing	6.1	2.2	8.9	7.5	7.2	38.4	35.2	0.0	0.0	42.1	57.9
Textiles	3.9	1.9	3.6	5.8	1.7	14.5	32.1	0.0	0.0	56.0	44.0
Apparel	3.8	1.6	2.1	2.3	9.7	82.1	45.4	0.0	0.0	47.6	52.4
Wood & Paper	1.8	0.8	1.4	3.4	0.8	14.2	37.9	0.0	0.0	52.7	47.3
Basic Intermediates	13.2	5.5	3.2	17.4	13.4	34.3	36.1	0.0	0.0	34.3	65.7
Machinery & Equipment	7.3	3.6	15.5	36.3	3.4	14.9	60.1	0.0	0.0	44.8	55.2
Utility	2.8	2.1	0.7	0.1	0.0	0.0	1.5	0.0	0.0	35.0	65.0
Construction	3.7	2.4	7.2	0.0	0.2	1.8	0.1	0.0	0.0	66.2	33.8
Trade	12.1	14.7	12.6	12.8	7.4	18.9	27.3	0.0	0.0	51.4	48.6
Dwellings	5.7	7.9	6.7	0.8	1.2	6.4	4.4	0.0	0.0	42.7	57.3
Public	10.6	15.5	21.2	9.0	7.3	21.3	23.9	0.0	0.0	62.8	37.2
Rest of Sub-Saharan Africa											
Grain	6.5	9.4	9.0	1.5	0.6	1.1	2.7	12.0	0.0	72.0	16.0
Fruit & Vegetables	5.4	8.3	6.4	0.6	1.7	3.6	1.3	12.0	0.0	72.0	16.0
Other Agriculture	3.9	5.6	2.0	0.5	15.8	48.9	2.7	12.0	0.0	72.0	16.0
Livestock	3.3	3.8	4.6	0.1	0.6	1.8	0.2	12.0	0.0	72.0	16.0
Forestry & Fishery	1.9	2.9	1.6	0.4	3.4	21.9	3.2	0.0	19.6	32.3	48.1
Energy & Minerals	13.5	15.8	0.2	0.7	45.4	41.4	1.1	0.0	39.0	10.3	50.7
Food Processing	5.8	2.6	9.8	9.0	5.0	11.1	17.0	0.0	0.0	40.0	60.0
Textiles	3.0	1.6	4.3	4.2	0.4	1.6	13.8	0.0	0.0	60.1	39.9
Apparel	1.1	0.6	1.9	2.2	1.1	14.2	21.1	0.0	0.0	50.5	49.5
Wood & Paper	1.8	1.0	0.7	2.7	2.6	18.3	17.5	0.0	0.0	62.7	37.3
Basic Intermediates	9.7	2.9	4.2	17.9	5.4	7.4	18.8	0.0	0.0	42.6	57.4
Machinery & Equipment	5.9	3.6	11.6	42.0	1.9	4.4	43.5	0.0	0.0	49.2	50.8
Utility	7.3	4.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	61.8
Construction	5.4	4.0	9.2	0.1	0.3	0.6	0.2	0.0	0.0	64.7	35.3
Trade	12.0	14.7	12.7	12.9	8.5	9.3	12.4	0.0	0.0	58.1	41.9
Dwellings	5.8	8.4	7.2	0.4	1.7	3.8	1.0	0.0	0.0	45.4	54.6
Public	7.9	10.7	12.7	4.7	5.7	9.5	7.3	0.0	0.0	65.1	34.9

Appendix Table 1: Structure of Production, Factor Income, Demand and Trade Patterns for Southern Africa Regions

	Sectoral Composition (percent)					Ratios (percent)		Factor Composition of Value Added (percent)			
	Output	Value added	Final Demand	Imports	Exports	Exports/ Output	Imports/ Absorption	Land	Resources	Labor	Capital
South Africa											
Grain	0.2	0.2	0.1	1.0	0.8	38.0	45.0	15.1	0.0	40.0	45.0
Fruit & Vegetables	1.3	1.8	1.0	0.3	3.0	25.7	3.1	15.0	0.0	40.0	45.0
Other Agriculture	0.4	0.6	0.3	1.0	0.5	13.2	23.9	15.1	0.0	40.0	45.0
Livestock	1.7	1.6	0.4	0.2	0.6	4.4	1.2	15.1	0.0	40.0	45.0
Forestry & Fishery	0.1	0.0	0.0	0.1	0.5	99.1	93.1	0.0	100.0	0.0	0.0
Energy & Minerals	3.2	4.1	0.2	8.3	22.7	83.4	64.4	0.0	20.7	45.3	34.1
Food Processing	7.4	3.2	12.3	3.8	4.7	7.4	6.2	0.0	0.0	56.8	43.2
Textiles	1.0	0.7	0.7	2.6	1.3	14.9	25.3	0.0	0.0	70.1	29.9
Apparel	1.3	1.1	2.5	1.9	1.6	13.9	15.7	0.0	0.0	75.7	24.3
Wood & Paper	4.1	3.2	1.5	3.2	5.7	15.9	9.9	0.0	0.0	51.6	48.4
Basic Intermediates	12.7	9.2	3.9	14.6	28.9	25.7	15.4	0.0	0.0	50.4	49.6
Machinery & Equipment	9.4	8.4	14.5	42.7	9.8	11.8	36.8	0.0	0.0	52.3	47.7
Utility	6.4	7.0	2.1	0.0	0.1	0.1	0.0	0.0	0.0	27.1	72.9
Construction	6.4	3.5	8.6	0.3	0.0	0.1	0.5	0.0	0.0	81.7	18.3
Trade	18.6	22.3	18.6	14.8	15.6	9.5	9.4	0.0	0.0	61.4	38.6
Dwellings	13.3	15.7	10.1	4.8	3.7	3.1	4.3	0.0	0.0	56.2	43.8
Public	12.5	17.4	23.3	0.6	0.3	0.3	0.5	0.0	0.0	92.7	7.3
Rest of World											
Grain	1.3	1.7	0.7	1.1	0.5	3.5	9.0	24.2	0.0	45.6	30.2
Fruit & Vegetables	2.1	2.9	2.0	0.5	1.5	6.6	2.8	26.0	0.0	44.6	29.3
Other Agriculture	0.8	1.1	0.5	0.8	1.9	22.0	12.7	25.8	0.0	40.9	33.3
Livestock	2.4	2.8	1.2	0.3	0.4	1.7	1.6	24.6	0.0	45.1	30.3
Forestry & Fishery	0.6	0.8	0.4	0.1	1.0	14.3	2.3	0.0	23.7	26.5	49.8
Energy & Minerals	5.6	7.1	0.4	1.8	24.2	38.6	5.5	0.0	34.7	14.3	51.0
Food Processing	8.2	4.6	11.9	5.1	5.0	5.8	6.6	0.0	0.0	39.8	60.2
Textiles	2.0	1.4	1.5	3.6	1.6	7.4	16.7	0.0	0.0	45.1	54.9
Apparel	2.4	1.8	3.6	3.8	5.8	21.6	17.4	0.0	0.0	49.1	50.9
Wood & Paper	3.4	2.6	2.1	3.8	3.4	9.2	12.0	0.0	0.0	52.9	47.1
Basic Intermediates	13.1	7.9	5.3	15.0	20.6	14.2	12.6	0.0	0.0	45.4	54.6
Machinery & Equipment	9.9	7.3	13.4	35.5	14.3	13.1	30.2	0.0	0.0	63.4	36.6
Utility	3.6	3.8	2.4	0.2	0.1	0.3	0.6	0.0	0.0	39.8	60.2
Construction	6.8	5.7	10.8	0.7	0.8	1.0	1.1	0.0	0.0	61.3	38.7
Trade	14.0	16.6	16.6	21.3	11.8	7.6	15.2	0.0	0.0	49.9	50.1
Dwellings	14.2	19.9	12.2	4.5	3.2	2.0	3.4	0.0	0.0	41.7	58.3
Public	9.6	12.0	14.9	2.0	3.8	3.5	2.3	0.0	0.0	86.6	13.4

Appendix Table 2: Sectoral Exports, Imports, and Net Trade Flows in the Southern Africa Model Regions

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
Exports								
Grain	2.9	1.0	1.0	22.8	0.0	0.2	0.2	3.2
Fruit & Vegetables	2.7	1.4	2.6	4.2	0.6	0.7	0.9	9.8
Other Agriculture	3.7	1.6	11.7	6.4	1.2	6.3	0.2	12.5
Livestock	2.6	3.8	1.4	2.7	0.0	0.2	0.2	2.4
Forestry & Fishery	0.8	0.7	2.1	2.5	0.2	1.4	0.1	6.4
Energy & Minerals	17.9	6.4	27.6	13.9	3.7	18.2	6.8	154.5
Food Processing	43.3	11.6	25.1	25.7	0.9	2.0	1.4	31.9
Textiles	23.4	30.3	22.7	6.7	0.2	0.1	0.4	10.5
Apparel	27.4	13.6	90.8	6.9	1.2	0.5	0.5	36.9
Wood & Paper	35.8	9.6	18.2	29.7	0.1	1.0	1.7	21.8
Basic Intermediates	160.1	94.9	39.7	80.7	1.6	2.2	8.7	131.8
Machinery & Equipment	373.4	462.0	164.6	244.4	0.4	0.8	2.9	91.0
Utility	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Construction	8.9	1.0	0.7	0.2	0.0	0.1	0.0	4.9
Trade	109.6	81.7	72.0	99.0	0.9	3.4	4.7	75.5
Dwellings	82.5	17.8	16.6	74.6	0.1	0.7	1.1	20.6
Public	30.5	7.4	7.1	24.7	0.9	2.3	0.1	24.2
Total	927.3	745.0	503.9	645.2	12.2	40.1	30.0	639.0
Imports								
Grain	6.5	9.4	5.8	0.2	0.2	0.5	0.3	8.5
Fruit & Vegetables	9.1	3.4	2.5	3.6	0.1	0.2	0.1	4.0
Other Agriculture	16.3	8.3	4.7	7.5	0.0	0.2	0.3	6.3
Livestock	4.3	3.1	2.6	0.7	0.0	0.0	0.1	2.6
Forestry & Fishery	4.2	6.7	1.7	0.5	0.0	0.1	0.0	0.9
Energy & Minerals	86.2	78.0	22.0	45.6	0.1	0.3	2.6	14.1
Food Processing	29.9	36.1	12.9	18.7	0.9	3.3	1.2	39.0
Textiles	18.0	12.0	24.1	9.9	0.7	1.5	0.8	27.3
Apparel	54.5	29.8	6.9	55.9	0.3	0.8	0.6	29.0
Wood & Paper	31.7	28.0	11.4	14.9	0.4	1.0	1.0	29.5
Basic Intermediates	113.9	90.7	101.6	85.2	2.0	6.5	4.6	115.1
Machinery & Equipment	271.6	197.0	228.7	336.7	4.2	15.3	13.6	272.5
Utility	0.8	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Construction	1.7	0.1	8.0	0.4	0.0	0.0	0.1	5.4
Trade	100.4	83.0	30.0	59.2	1.5	4.7	4.7	163.3
Dwellings	64.9	41.2	19.2	52.8	0.1	0.2	1.5	34.2
Public	39.2	12.9	10.8	16.1	1.0	1.7	0.2	15.2
Total	853.6	639.8	492.9	707.9	11.5	36.5	31.9	768.7
Net Trade (Exports - Imports)								
Grain	-3.5	-8.4	-4.8	22.6	-0.2	-0.3	-0.1	-5.3

Appendix Table 2: Sectoral Exports, Imports, and Net Trade Flows in the Southern Africa Model Regions

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
Fruit & Vegetables	-6.4	-2.0	0.1	0.6	0.5	0.5	0.8	5.8
Other Agriculture	-12.5	-6.7	6.9	-1.1	1.2	6.2	-0.2	6.2
Livestock	-1.7	0.7	-1.2	2.0	0.0	0.2	0.1	-0.2
Forestry & Fishery	-3.4	-6.0	0.4	2.0	0.1	1.2	0.1	5.5
Energy & Minerals	-68.4	-71.6	5.5	-31.6	3.6	17.9	4.2	140.5
Food Processing	13.4	-24.5	12.2	7.0	0.0	-1.3	0.2	-7.1
Textiles	5.3	18.3	-1.4	-3.1	-0.5	-1.4	-0.4	-16.8
Apparel	-27.1	-16.2	83.9	-49.0	0.9	-0.4	-0.1	7.9
Wood & Paper	4.1	-18.3	6.7	14.8	-0.3	0.1	0.7	-7.7
Basic Intermediates	46.3	4.3	-61.9	-4.6	-0.4	-4.4	4.0	16.7
Machinery & Equipment	101.8	265.0	-64.1	-92.3	-3.7	-14.5	-10.6	-181.5
Utility	0.7	0.0	0.0	0.0	0.0	0.0	0.0	-0.7
Construction	7.1	0.8	-7.3	-0.2	0.0	0.1	-0.1	-0.5
Trade	9.2	-1.3	42.0	39.8	-0.6	-1.3	0.0	-87.8
Dwellings	17.5	-23.3	-2.5	21.9	0.0	0.5	-0.4	-13.6
Public	-8.7	-5.5	-3.7	8.7	-0.1	0.6	-0.1	8.9
Total	73.7	105.2	11.0	-62.6	0.7	3.6	-1.9	-129.7

Appendix Table 3: Sectoral Production Taxes, Export Taxes, and Tariffs (Percent *ad valoren*)

			Bilateral Import Tariffs and NTBs							
	Production Taxes (+) and Subsidies (-)	Export Taxes (+) and Subsidies (-)	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
EU										
Grain	-67.5	-22.2	0.0	14.2	38.3	10.9	1.6	10.9	4.8	6.4
Fruit & Vegetables	-0.5	-3.3	0.0	7.8	5.9	4.8	71.1	8.0	16.1	11.5
Other Agriculture	-2.5	-2.7	0.0	9.3	3.1	10.3	7.0	5.5	6.3	10.7
Livestock	-12.1	-44.6	0.0	0.6	1.7	27.9	1.1	1.0	0.1	24.0
Forestry & Fishery	0.0	0.5	0.0	5.4	6.4	1.9	7.6	2.0	7.2	2.1
Energy & Minerals	-0.7	0.6	0.0	0.2	0.1	0.1	0.0	0.0	0.2	0.0
Food Processing	4.3	-23.7	0.0	66.3	11.4	20.3	64.4	10.3	37.7	25.2
Textiles	1.9	0.6	0.0	6.6	6.3	6.9	5.9	5.9	4.3	4.0
Apparel	2.1	0.7	0.0	7.4	9.2	7.6	10.2	7.0	6.5	8.5
Wood & Paper	1.0	0.3	0.0	3.2	2.9	2.1	2.4	2.0	3.5	1.9
Basic Intermediates	4.9	0.5	0.0	4.3	5.4	3.5	2.5	2.9	2.7	2.0
Machinery & Equipment	1.0	0.3	0.0	4.9	4.9	3.5	4.6	3.2	3.3	2.1
Utility	3.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	1.6	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5
Dwellings	2.7	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Public	1.7	0.2	0.0	0.2	0.1	0.0	0.1	0.1	0.2	0.0
Total	2.1	-0.9	0.0	4.8	4.9	2.6	19.2	2.8	4.7	4.0
High Income Asia										
Grain	-12.4	-4.9	278.3	0.0	58.4	229.7	0.0	92.6	295.2	49.8
Fruit & Vegetables	1.2	-1.7	16.8	0.0	31.2	11.7	10.1	3.0	81.7	32.6
Other Agriculture	1.7	0.0	4.1	0.0	5.5	12.0	3.3	7.2	5.2	4.7
Livestock	-4.6	-4.3	8.4	0.0	12.5	4.7	20.2	2.2	5.9	6.4
Forestry & Fishery	2.2	0.1	3.1	0.0	1.9	0.8	4.5	1.2	1.0	3.6
Energy & Minerals	1.3	0.3	0.5	0.0	1.5	0.6	4.1	4.6	0.4	1.1
Food Processing	10.4	-3.7	38.0	0.0	17.8	25.9	4.8	2.1	43.1	18.3
Textiles	1.9	0.2	8.2	0.0	5.3	5.7	5.1	2.5	5.9	5.6
Apparel	1.7	0.8	11.5	0.0	6.7	10.6	4.0	6.5	2.3	8.6
Wood & Paper	1.6	0.1	4.5	0.0	2.1	1.7	2.3	2.4	3.0	2.1
Basic Intermediates	5.2	0.1	4.5	0.0	3.9	3.6	0.7	0.8	2.3	2.7
Machinery & Equipment	3.8	0.0	4.7	0.0	2.0	3.7	4.1	2.2	5.5	3.4
Utility	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	1.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	2.8	0.0	2.2	0.0	2.5	2.5	2.9	2.9	2.9	18.2
Dwellings	4.3	0.0	1.2	0.0	1.9	1.6	1.4	1.9	2.0	2.1
Public	0.8	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Total	3.7	0.0	6.2	0.0	4.3	14.3	2.3	4.5	8.5	5.9
Low Income Asia										
Grain	-0.8	9.5	-5.8	19.7	0.0	13.0	66.0	4.0	136.8	40.8

Appendix Table 3: Sectoral Production Taxes, Export Taxes, and Tariffs (Percent *ad valoren*)

			Bilateral Import Tariffs and NTBs							
	Production Taxes (+) and Subsidies (-)	Export Taxes (+) and Subsidies (-)	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
Fruit & Vegetables	1.3	1.6	12.2	23.5	0.0	14.8	3.9	31.9	2.9	19.5
Other Agriculture	0.2	3.3	21.1	16.4	0.0	16.2	21.6	30.4	7.1	16.7
Livestock	1.1	7.4	6.3	14.6	0.0	16.7	22.1	22.3	15.5	22.0
Forestry & Fishery	2.4	6.5	40.0	1.3	0.0	8.9	12.6	15.2	3.9	12.8
Energy & Minerals	0.4	4.0	1.8	6.9	0.0	6.4	3.6	2.0	3.4	5.2
Food Processing	6.9	-5.8	32.9	36.4	0.0	18.2	49.8	33.9	14.7	26.2
Textiles	4.0	-0.5	28.3	43.0	0.0	19.2	13.1	7.3	41.9	27.3
Apparel	6.8	1.9	11.0	24.8	0.0	20.9	26.3	38.8	15.2	14.1
Wood & Paper	3.7	0.8	17.0	17.5	0.0	11.9	5.6	9.2	14.2	16.6
Basic Intermediates	7.8	-4.9	21.6	16.7	0.0	16.2	20.5	32.2	21.7	21.6
Machinery & Equipment	6.1	5.9	21.8	17.4	0.0	13.9	29.7	22.4	60.8	20.6
Utility	6.4	-9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Construction	2.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	2.9	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.7
Dwellings	3.6	0.6	1.4	0.7	0.0	1.2	0.7	0.7	0.7	0.8
Public	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	3.9	2.2	15.3	18.9	0.0	12.4	11.9	12.2	19.9	19.3
North America										
Grain	-15.4	-0.4	-1.5	1.8	0.0	0.0	0.0	0.0	0.0	-2.9
Fruit & Vegetables	-0.2	1.2	1.6	6.8	16.9	0.0	50.9	32.2	14.7	12.7
Other Agriculture	0.2	1.8	5.5	0.8	0.6	0.0	41.8	1.6	5.4	5.8
Livestock	-5.4	-1.9	0.6	4.8	0.3	0.0	1.8	1.0	1.4	1.6
Forestry & Fishery	0.4	1.4	1.0	0.5	0.6	0.0	0.5	1.4	0.0	0.6
Energy & Minerals	0.6	3.5	0.9	0.8	0.3	0.0	0.6	1.0	0.3	0.9
Food Processing	0.2	0.2	15.1	11.8	3.4	0.0	53.4	4.5	14.0	10.1
Textiles	0.3	0.5	10.1	11.2	9.4	0.0	5.1	8.2	7.6	8.8
Apparel	0.6	0.3	10.3	13.3	11.6	0.0	13.8	12.3	11.9	11.5
Wood & Paper	0.2	1.0	2.0	2.6	1.7	0.0	0.5	1.1	2.0	1.1
Basic Intermediates	0.2	1.8	4.4	4.6	7.2	0.0	1.4	2.6	0.7	2.7
Machinery & Equipment	0.3	1.0	3.2	3.0	2.1	0.0	1.6	2.0	0.8	2.2
Utility	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	1.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9
Dwellings	0.6	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	2.5	3.0	3.2	4.6	0.0	3.7	1.2	2.0	4.7
Rest of Southern Africa										
Grain	-1.3	4.1	13.6	25.8	21.9	7.4	0.0	-2.5	-6.0	15.4
Fruit & Vegetables	0.1	4.0	12.6	9.2	13.2	6.0	0.0	11.0	10.6	14.7
Other Agriculture	-0.6	9.6	12.6	6.2	12.9	6.2	0.0	10.6	10.6	14.6

Appendix Table 3: Sectoral Production Taxes, Export Taxes, and Tariffs (Percent *ad valoren*)

			Bilateral Import Tariffs and NTBs							
	Production Taxes (+) and Subsidies (-)	Export Taxes (+) and Subsidies (-)	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
Livestock	1.0	16.1	13.2	0.0	5.1	2.4	0.0	4.7	4.7	11.1
Forestry & Fishery	3.5	1.0	8.8	12.3	7.7	12.0	0.0	6.0	9.4	10.0
Energy & Minerals	4.4	28.4	8.2	5.9	8.2	14.1	0.0	0.0	0.5	20.8
Food Processing	9.0	-4.7	11.0	18.4	12.2	16.7	0.0	10.7	6.1	13.0
Textiles	4.5	-5.6	17.1	19.6	17.0	14.7	0.0	25.5	25.5	12.2
Apparel	16.3	-2.1	15.7	19.4	16.0	16.1	0.0	23.5	26.5	15.8
Wood & Paper	5.0	-3.4	14.0	8.2	11.3	6.6	0.0	13.9	9.4	11.4
Basic Intermediates	11.8	-7.4	10.4	10.0	9.9	8.0	0.0	7.0	5.3	4.8
Machinery & Equipment	7.2	-3.3	7.3	10.8	7.4	4.9	0.0	6.3	4.9	9.7
Utility	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Construction	3.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	6.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
Dwellings	3.6	2.0	1.3	1.3	1.3	1.3	0.0	1.3	1.5	1.4
Public	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	5.0	8.3	7.0	9.9	9.9	4.3	0.0	6.5	5.8	8.0
Rest of Sub-Saharan Africa										
Grain	-1.8	6.5	19.9	26.2	20.5	17.6	0.3	0.0	-6.5	17.9
Fruit & Vegetables	-0.2	13.3	17.1	17.5	17.8	26.6	10.6	0.0	18.3	14.8
Other Agriculture	-1.9	10.1	21.3	29.7	17.2	25.5	23.4	0.0	26.6	17.4
Livestock	0.5	17.7	15.0	8.5	7.1	10.4	8.8	0.0	11.1	12.1
Forestry & Fishery	1.2	8.4	9.6	20.9	13.5	23.1	20.4	0.0	29.7	16.8
Energy & Minerals	1.5	7.7	13.3	44.0	32.6	13.6	42.8	0.0	19.0	12.6
Food Processing	3.3	3.4	16.1	21.3	4.2	16.1	22.1	0.0	23.6	13.0
Textiles	3.4	-2.3	27.9	30.1	36.9	31.9	18.0	0.0	32.8	26.8
Apparel	2.2	0.1	31.6	36.3	34.4	41.7	32.0	0.0	47.7	27.4
Wood & Paper	3.2	4.6	20.6	14.6	17.8	16.6	7.2	0.0	25.2	20.3
Basic Intermediates	9.5	1.1	15.5	16.4	18.9	11.6	10.3	0.0	14.3	15.4
Machinery & Equipment	6.4	-1.2	15.7	19.6	23.1	14.5	14.2	0.0	22.1	19.3
Utility	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	3.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	4.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.4
Dwellings	1.6	2.1	0.3	0.4	0.4	0.3	0.6	0.0	0.3	0.3
Public	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	3.0	6.3	13.9	17.6	20.0	10.5	12.2	0.0	18.2	17.4
South Africa										
Grain	-1.1	6.0	15.4	19.0	4.1	9.6	-0.6	-5.3	0.0	-0.6
Fruit & Vegetables	-0.9	0.4	7.6	8.2	10.9	8.2	17.0	11.3	0.0	15.8
Other Agriculture	-0.8	-0.1	0.7	0.5	0.2	0.5	1.8	0.1	0.0	0.5
Livestock	-0.7	-2.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.8
Forestry & Fishery	0.0	2.7	0.0	0.0	1.7	0.0	1.2	0.0	0.0	1.3

Appendix Table 3: Sectoral Production Taxes, Export Taxes, and Tariffs (Percent *ad valoren*)

			Bilateral Import Tariffs and NTBs							
	Production Taxes (+) and Subsidies (-)	Export Taxes (+) and Subsidies (-)	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World
Energy & Minerals	-0.5	-5.3	0.0	1.9	1.2	0.0	3.1	0.5	0.0	0.0
Food Processing	-0.9	-2.1	17.0	23.7	8.6	18.8	9.1	3.2	0.0	5.3
Textiles	-0.3	-0.1	8.0	15.9	12.7	16.5	10.2	2.4	0.0	20.3
Apparel	-0.3	-0.3	15.0	18.7	28.7	18.6	23.4	25.4	0.0	22.1
Wood & Paper	-0.4	-0.4	5.0	6.2	7.3	5.0	10.4	1.3	0.0	8.0
Basic Intermediates	-0.2	-0.1	2.8	7.7	12.6	4.0	9.8	4.6	0.0	3.8
Machinery & Equipment	-0.1	0.2	6.2	13.7	9.1	5.3	10.7	5.8	0.0	5.4
Utility	-0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade	-0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3
Dwellings	-0.5	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	-0.3	-1.3	4.4	11.5	10.1	4.2	9.0	0.7	0.0	3.7
Rest of World										
Grain	-1.7	3.5	12.8	3.5	1.3	1.9	11.5	23.7	6.8	0.0
Fruit & Vegetables	-0.5	0.6	31.2	19.7	23.9	25.4	36.9	37.9	31.8	0.0
Other Agriculture	-0.4	4.1	24.5	11.3	11.3	15.5	21.8	17.5	17.1	0.0
Livestock	-3.1	-21.3	28.4	22.5	28.1	17.5	55.6	15.4	46.2	0.0
Forestry & Fishery	0.6	1.2	4.6	11.5	14.0	6.8	11.5	8.3	2.7	0.0
Energy & Minerals	2.5	0.7	8.1	5.4	12.5	4.0	11.1	8.3	2.5	0.0
Food Processing	0.8	-4.4	27.2	45.2	35.5	26.3	62.4	26.5	26.0	0.0
Textiles	0.4	-1.5	14.3	25.2	23.2	13.6	37.8	17.6	20.1	0.0
Apparel	0.4	0.5	14.5	22.2	18.0	23.7	19.1	6.8	16.6	0.0
Wood & Paper	0.7	0.2	8.2	16.5	16.6	9.2	15.3	14.4	11.1	0.0
Basic Intermediates	1.5	0.6	7.5	13.0	16.3	8.9	10.9	17.3	6.6	0.0
Machinery & Equipment	0.8	0.2	9.2	14.7	14.8	11.6	18.6	13.0	11.5	0.0
Utility	2.1	-0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Construction	0.7	0.8	0.6	0.7	0.7	0.7	1.0	0.8	1.0	0.0
Trade	1.6	1.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	302.3
Dwellings	2.0	0.9	0.7	0.9	0.8	0.7	0.6	0.6	0.7	0.0
Public	-1.0	2.4	0.5	0.9	0.9	0.8	0.7	0.6	1.1	0.0
Total	0.9	0.4	8.4	10.0	12.4	7.9	10.1	8.8	4.5	0.0

Appendix Table 4: Export Market Shares

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World	Total
EU									
Grain	0.0	5.1	18.4	1.3	1.8	6.2	1.3	65.8	100.0
Fruit & Vegetables	0.0	2.1	2.3	6.8	0.4	1.5	0.2	86.9	100.0
Other Agriculture	0.0	15.6	6.0	21.6	0.2	1.4	0.7	54.6	100.0
Livestock	0.0	17.2	13.5	6.6	0.1	0.6	0.8	61.2	100.0
Forestry & Fishery	0.0	21.6	9.2	3.9	0.4	13.8	0.4	50.7	100.0
Energy & Minerals	0.0	6.9	26.0	27.0	0.2	0.4	2.0	37.6	100.0
Food Processing	0.0	14.5	6.5	16.4	0.8	4.4	0.8	56.6	100.0
Textiles	0.0	11.6	7.8	11.9	0.7	2.2	1.1	64.8	100.0
Apparel	0.0	21.3	7.6	19.1	0.2	0.6	0.3	50.9	100.0
Wood & Paper	0.0	12.7	6.8	15.9	0.4	1.9	1.5	60.8	100.0
Basic Intermediates	0.0	15.1	9.8	20.9	0.3	2.5	1.6	49.9	100.0
Machinery & Equipment	0.0	15.0	14.3	22.5	0.5	2.2	1.9	43.6	100.0
Utility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
Construction	0.0	0.7	44.2	3.3	0.0	0.2	0.5	51.0	100.0
Trade	0.0	13.6	10.2	14.5	0.5	1.9	1.9	57.4	100.0
Dwellings	0.0	13.7	11.4	48.3	0.0	0.1	1.0	25.5	100.0
Public	0.0	12.9	15.2	34.7	1.4	2.5	0.2	33.1	100.0
Total	0.0	14.3	12.2	22.8	0.4	2.0	1.5	46.7	100.0
High Income Asia									
Grain	2.6	0.0	52.9	0.9	0.8	0.1	0.6	42.0	100.0
Fruit & Vegetables	15.4	0.0	51.0	23.7	0.4	0.1	0.2	9.2	100.0
Other Agriculture	20.1	0.0	41.1	10.3	0.4	0.6	2.4	25.1	100.0
Livestock	35.5	0.0	41.9	7.5	0.3	0.0	0.5	14.3	100.0
Forestry & Fishery	15.3	0.0	67.1	5.3	0.5	0.1	0.1	11.7	100.0
Energy & Minerals	37.6	0.0	37.0	10.8	0.0	0.0	0.6	14.0	100.0
Food Processing	16.6	0.0	36.1	24.1	0.8	0.8	0.9	20.7	100.0
Textiles	6.9	0.0	67.6	8.1	0.4	0.6	0.8	15.7	100.0
Apparel	16.9	0.0	27.0	48.1	0.0	0.1	0.5	7.4	100.0
Wood & Paper	11.5	0.0	48.7	30.6	0.3	0.4	0.7	7.8	100.0
Basic Intermediates	12.1	0.0	58.6	18.7	0.1	0.6	0.6	9.3	100.0
Machinery & Equipment	20.7	0.0	28.8	39.1	0.1	1.0	0.7	9.6	100.0
Utility	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Construction	7.6	0.0	59.2	3.5	0.0	0.1	0.4	29.1	100.0
Trade	22.9	0.0	8.1	22.9	0.2	0.5	0.5	44.9	100.0
Dwellings	22.5	0.0	20.9	36.4	0.0	0.1	1.0	19.2	100.0
Public	36.6	0.0	20.5	20.2	1.5	2.5	0.2	18.5	100.0
Total	19.4	0.0	32.3	32.4	0.2	0.8	0.7	14.3	100.0
Low Income Asia									
Grain	28.8	34.4	0.0	3.3	1.2	1.8	1.1	29.3	100.0

Appendix Table 4: Export Market Shares

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World	Total
Fruit & Vegetables	13.1	48.9	0.0	12.0	0.8	0.8	1.2	23.2	100.0
Other Agriculture	23.9	33.6	0.0	24.8	0.1	0.5	0.7	16.3	100.0
Livestock	33.1	52.0	0.0	9.4	0.0	0.0	0.0	5.5	100.0
Forestry & Fishery	6.8	81.7	0.0	5.6	0.0	0.1	0.0	5.7	100.0
Energy & Minerals	10.7	74.3	0.0	10.6	0.0	0.0	0.1	4.3	100.0
Food Processing	17.9	45.5	0.0	14.7	0.4	2.2	0.9	18.4	100.0
Textiles	26.3	33.0	0.0	14.3	1.3	2.8	0.9	21.4	100.0
Apparel	28.5	23.7	0.0	35.0	0.2	0.6	0.4	11.5	100.0
Wood & Paper	18.4	51.7	0.0	20.6	0.1	0.3	0.4	8.4	100.0
Basic Intermediates	20.1	45.0	0.0	20.3	0.3	1.4	0.6	12.3	100.0
Machinery & Equipment	22.8	33.1	0.0	34.6	0.1	0.6	0.4	8.4	100.0
Utility	19.7	0.0	0.0	0.0	0.0	0.0	0.0	80.3	100.0
Construction	22.5	2.0	0.0	3.1	0.1	0.6	1.1	70.6	100.0
Trade	24.3	28.3	0.0	20.4	0.3	0.6	0.6	25.5	100.0
Dwellings	36.8	28.0	0.0	18.1	0.1	0.2	0.8	16.0	100.0
Public	48.6	16.1	0.0	11.4	1.4	2.3	0.4	19.8	100.0
Total	23.7	35.1	0.0	26.3	0.3	0.8	0.5	13.4	100.0
North America									
Grain	17.2	37.2	18.1	0.0	0.3	1.2	0.8	25.1	100.0
Fruit & Vegetables	33.4	34.9	12.9	0.0	0.3	1.1	0.2	17.1	100.0
Other Agriculture	19.3	30.4	34.1	0.0	0.0	0.3	0.1	15.7	100.0
Livestock	15.8	64.2	10.6	0.0	0.0	0.0	0.3	9.0	100.0
Forestry & Fishery	5.9	84.6	5.7	0.0	0.0	0.0	0.0	3.7	100.0
Energy & Minerals	41.3	33.1	6.1	0.0	0.0	0.1	0.6	18.7	100.0
Food Processing	14.5	46.4	9.3	0.0	0.1	1.0	0.4	28.2	100.0
Textiles	27.7	16.8	15.7	0.0	0.5	1.9	0.7	36.7	100.0
Apparel	17.4	23.9	7.3	0.0	0.0	0.1	0.2	51.1	100.0
Wood & Paper	31.8	39.4	10.1	0.0	0.1	0.3	0.7	17.6	100.0
Basic Intermediates	29.7	31.1	13.4	0.0	0.1	0.5	0.8	24.5	100.0
Machinery & Equipment	32.0	31.9	14.0	0.0	0.2	0.4	0.7	20.9	100.0
Utility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
Construction	52.2	1.4	24.9	0.0	0.0	0.1	0.2	21.1	100.0
Trade	27.1	23.0	5.4	0.0	0.3	1.0	1.0	42.3	100.0
Dwellings	58.8	26.9	4.9	0.0	0.0	0.0	0.4	9.1	100.0
Public	65.2	21.0	5.3	0.0	0.5	0.8	0.1	7.1	100.0
Total	33.8	30.7	10.9	0.0	0.2	0.5	0.7	23.3	100.0
Rest of Southern Africa									
Grain	10.0	22.9	5.6	0.2	0.0	7.2	35.0	19.0	100.0
Fruit & Vegetables	71.8	0.3	16.1	6.9	0.0	0.5	0.8	3.6	100.0
Other Agriculture	52.5	11.9	13.0	4.4	0.0	0.3	6.2	11.7	100.0

Appendix Table 4: Export Market Shares

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World	Total
Livestock	16.9	14.7	37.2	1.8	0.0	1.8	7.6	20.0	100.0
Forestry & Fishery	60.7	27.4	3.4	2.4	0.0	1.7	2.6	1.8	100.0
Energy & Minerals	22.4	4.1	5.5	63.0	0.0	0.2	0.4	4.5	100.0
Food Processing	78.0	5.9	0.7	4.3	0.0	0.6	5.9	4.6	100.0
Textiles	62.6	2.8	6.7	5.2	0.0	7.9	12.4	2.4	100.0
Apparel	74.2	0.6	0.2	19.9	0.0	0.1	4.3	0.7	100.0
Wood & Paper	20.2	4.7	13.8	4.7	0.0	3.4	51.0	2.2	100.0
Basic Intermediates	25.9	25.6	22.1	12.7	0.0	0.9	3.1	9.6	100.0
Machinery & Equipment	34.0	4.5	4.4	11.8	0.0	2.9	14.9	27.5	100.0
Utility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	11.3	1.1	45.6	6.2	0.0	2.1	2.4	31.4	100.0
Trade	15.7	19.8	10.7	6.2	0.0	1.5	1.5	44.7	100.0
Dwellings	21.3	17.9	15.4	9.5	0.0	1.1	1.7	33.1	100.0
Public	43.0	10.3	13.2	11.6	0.0	1.7	0.5	19.7	100.0
Total	40.0	9.6	9.4	25.9	0.0	0.8	3.5	10.7	100.0
Rest of Sub-Saharan Africa									
Grain	34.9	21.4	1.0	2.8	0.3	0.0	9.0	30.5	100.0
Fruit & Vegetables	80.2	0.6	12.9	2.0	0.1	0.0	0.3	4.0	100.0
Other Agriculture	67.6	3.2	9.1	7.2	0.2	0.0	0.8	11.8	100.0
Livestock	28.1	2.5	11.8	2.2	0.5	0.0	0.1	54.9	100.0
Forestry & Fishery	57.3	16.4	16.4	0.7	0.1	0.0	0.2	9.0	100.0
Energy & Minerals	43.2	5.0	5.3	41.8	0.0	0.0	0.6	4.0	100.0
Food Processing	74.1	13.7	3.7	3.4	0.2	0.0	0.9	4.1	100.0
Textiles	63.4	3.3	7.8	10.3	3.8	0.0	1.1	10.2	100.0
Apparel	78.6	0.7	3.2	13.7	0.7	0.0	0.1	3.0	100.0
Wood & Paper	86.3	0.9	2.9	3.1	0.4	0.0	0.5	6.0	100.0
Basic Intermediates	37.9	4.9	4.6	20.2	0.9	0.0	0.7	30.8	100.0
Machinery & Equipment	63.2	14.8	7.0	6.7	1.1	0.0	1.0	6.3	100.0
Utility	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	16.6	1.0	50.1	3.0	0.2	0.0	1.1	28.0	100.0
Trade	20.1	25.3	6.3	7.9	0.4	0.0	0.6	39.3	100.0
Dwellings	32.0	21.1	12.2	13.9	0.4	0.0	0.9	19.5	100.0
Public	46.1	9.5	12.1	12.7	1.0	0.0	0.3	18.3	100.0
Total	49.2	7.8	7.0	23.5	0.3	0.0	0.7	11.5	100.0
South Africa									
Grain	5.2	24.4	26.1	0.6	16.6	2.7	0.0	24.3	100.0
Fruit & Vegetables	59.0	12.1	1.8	9.8	3.4	1.1	0.0	12.7	100.0
Other Agriculture	49.4	9.1	12.2	4.7	6.5	0.9	0.0	17.2	100.0
Livestock	74.8	5.0	3.2	7.3	2.5	0.0	0.0	7.1	100.0
Forestry & Fishery	47.8	21.0	17.9	0.0	1.1	0.3	0.0	12.0	100.0

Appendix Table 4: Export Market Shares

	EU	High Income Asia	Low Income Asia	North America	Rest of Southern Africa	Rest of Sub-Saharan Africa	South Africa	Rest of World	Total
Energy & Minerals	48.7	15.1	5.6	3.2	1.2	0.2	0.0	26.0	100.0
Food Processing	43.5	17.3	3.8	7.0	14.7	4.4	0.0	9.2	100.0
Textiles	33.1	20.9	11.7	6.8	13.3	3.3	0.0	10.9	100.0
Apparel	41.9	11.6	1.4	36.0	5.4	1.5	0.0	2.1	100.0
Wood & Paper	40.8	22.0	13.9	5.5	9.0	2.9	0.0	6.0	100.0
Basic Intermediates	19.0	24.7	9.3	20.7	11.6	3.8	0.0	11.0	100.0
Machinery & Equipment	30.2	8.6	6.1	10.4	28.7	6.9	0.0	9.3	100.0
Utility	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Construction	9.1	1.1	44.8	7.8	0.5	2.7	0.0	33.9	100.0
Trade	20.6	26.0	5.7	8.1	0.3	0.5	0.0	38.7	100.0
Dwellings	34.4	21.8	11.6	14.8	0.2	0.3	0.0	16.8	100.0
Public	27.6	14.9	19.0	6.2	2.4	2.6	0.0	27.3	100.0
Total	32.3	19.6	7.5	11.3	8.3	2.4	0.0	18.5	100.0
Rest of World									
Grain	66.2	8.0	16.8	4.9	0.8	1.7	1.6	0.0	100.0
Fruit & Vegetables	57.1	4.7	10.3	26.6	0.1	0.9	0.3	0.0	100.0
Other Agriculture	55.4	12.1	7.3	24.8	0.0	0.1	0.3	0.0	100.0
Livestock	79.7	5.8	11.2	3.2	0.0	0.1	0.1	0.0	100.0
Forestry & Fishery	45.0	38.7	10.8	5.0	0.0	0.4	0.1	0.0	100.0
Energy & Minerals	40.9	32.1	8.2	17.4	0.0	0.1	1.3	0.0	100.0
Food Processing	53.0	18.5	10.5	15.4	0.2	1.3	1.1	0.0	100.0
Textiles	74.3	5.4	6.5	12.9	0.2	0.3	0.4	0.0	100.0
Apparel	64.1	1.8	1.7	32.2	0.0	0.1	0.1	0.0	100.0
Wood & Paper	74.5	8.9	4.8	11.0	0.1	0.4	0.3	0.0	100.0
Basic Intermediates	51.2	15.9	13.9	17.9	0.1	0.5	0.4	0.0	100.0
Machinery & Equipment	64.7	8.8	8.8	15.9	0.3	0.8	0.8	0.0	100.0
Utility	99.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0	100.0
Construction	27.7	1.2	68.8	1.6	0.0	0.2	0.5	0.0	100.0
Trade	47.1	30.1	8.2	12.1	0.4	1.0	1.0	0.0	100.0
Dwellings	50.1	23.4	10.3	15.3	0.1	0.2	0.7	0.0	100.0
Public	64.3	9.5	11.9	11.5	1.0	1.6	0.3	0.0	100.0
Total	52.8	19.2	9.8	16.7	0.2	0.6	0.8	0.0	100.0

Appendix Table 5: Bilateral Trade Flows for South Africa & Rest of Southern Africa

	EU-South Africa FTA				EU-South Africa & SADC FTA			
	EU	Rest of Southern Africa	South Africa	All Other Countries	EU	Rest of Southern Africa	South Africa	All Other Countries
EU								
Grain	0.000	0.012	23.440	0.028	0.000	-1.265	24.090	0.026
Fruit & Vegetables	0.000	-0.025	9.241	-0.004	0.000	-1.206	9.671	-0.005
Other Agriculture	0.000	0.000	1.946	-0.002	0.000	-1.158	2.223	-0.007
Livestock	0.000	0.008	1.340	0.000	0.000	-1.115	1.767	0.000
Forestry & Fishery	0.000	0.005	1.137	-0.001	0.000	-0.919	1.019	-0.002
Energy & Minerals	0.000	0.008	0.681	-0.003	0.000	0.114	0.907	-0.004
Food Processing	0.000	-0.192	19.832	0.006	0.000	-1.559	20.269	0.006
Textiles	0.000	0.066	6.528	0.003	0.000	-0.075	6.921	0.001
Apparel	0.000	0.089	11.941	0.003	0.000	-0.593	12.348	0.002
Wood & Paper	0.000	-0.128	5.763	0.001	0.000	-2.237	6.046	0.000
Basic Intermediates	0.000	-0.080	3.148	-0.001	0.000	-1.405	3.448	-0.001
Machinery & Equipment	0.000	0.003	5.476	0.001	0.000	-0.783	5.678	0.000
Utility	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.006
Construction	0.000	-0.052	-0.333	0.005	0.000	-0.867	-0.184	0.004
Trade	0.000	0.058	0.194	0.006	0.000	-0.487	0.506	0.005
Dwellings	0.000	0.031	0.193	0.005	0.000	-0.622	0.500	0.005
Public	0.000	0.000	-0.378	0.005	0.000	-0.727	-0.223	0.005
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	-0.019	4.312	0.002	0.000	-0.905	4.571	0.002
South Africa								
Grain	7.365	0.379	0.000	0.398	6.905	-9.643	0.000	-0.039
Fruit & Vegetables	19.540	0.633	0.000	0.652	19.499	11.731	0.000	0.623
Other Agriculture	7.587	0.236	0.000	0.234	7.549	11.288	0.000	0.204
Livestock	0.305	0.213	0.000	0.204	0.277	4.464	0.000	0.177
Forestry & Fishery	8.932	0.460	0.000	0.452	8.907	10.426	0.000	0.428
Energy & Minerals	0.357	0.097	0.000	0.085	0.328	0.809	0.000	0.055
Food Processing	46.167	0.782	0.000	0.981	46.162	6.448	0.000	0.978
Textiles	3.400	0.132	0.000	-0.038	3.295	27.908	0.000	-0.063
Apparel	5.716	0.207	0.000	-0.111	5.691	28.598	0.000	-0.129
Wood & Paper	4.265	0.018	0.000	0.144	4.254	8.598	0.000	0.132
Basic Intermediates	3.246	0.018	0.000	0.096	3.228	4.803	0.000	0.078
Machinery & Equipment	3.080	-0.024	0.000	-0.028	3.082	3.738	0.000	-0.026
Utility	0.000	-0.037	0.000	0.000	0.000	0.557	0.000	0.000
Construction	-0.095	-0.162	0.000	-0.106	-0.056	-0.937	0.000	-0.068
Trade	-0.079	-0.055	0.000	-0.109	-0.047	-0.565	0.000	-0.076
Dwellings	-0.070	-0.076	0.000	-0.102	-0.031	0.488	0.000	-0.064
Public	0.038	-0.127	0.000	-0.122	0.078	-0.814	0.000	-0.083
Total	5.276	0.104	0.000	0.079	5.261	5.207	0.000	0.070
Rest of Southern Africa								
Grain	0.123	0.000	0.798	0.107	0.696	0.000	0.989	0.682
Fruit & Vegetables	-0.025	0.000	0.414	0.024	0.196	0.000	21.234	0.250
Other Agriculture	0.041	0.000	1.129	0.031	0.273	0.000	3.756	0.268
Livestock	0.046	0.000	1.324	0.037	0.216	0.000	1.924	0.207
Forestry & Fishery	0.029	0.000	1.162	0.019	0.154	0.000	2.548	0.144
Energy & Minerals	-0.001	0.000	0.655	0.003	0.052	0.000	4.619	0.050
Food Processing	0.031	0.000	-0.054	0.032	0.312	0.000	11.314	0.316
Textiles	-0.012	0.000	-0.043	0.005	-0.289	0.000	11.731	0.039
Apparel	-0.001	0.000	-0.104	-0.009	-0.223	0.000	27.724	-0.208
Wood & Paper	0.031	0.000	-0.085	0.017	0.445	0.000	12.867	0.430
Basic Intermediates	0.032	0.000	-0.088	0.016	0.232	0.000	11.896	0.216
Machinery & Equipment	0.007	0.000	-0.753	-0.005	-0.082	0.000	9.350	-0.094
Utility	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Construction	-0.010	0.000	-0.359	-0.021	-0.258	0.000	-0.457	-0.269
Trade	-0.020	0.000	0.158	-0.031	-0.238	0.000	0.253	-0.250
Dwellings	-0.011	0.000	0.165	-0.023	-0.218	0.000	0.265	-0.229
Public	-0.011	0.000	-0.407	-0.024	-0.238	0.000	-0.478	-0.251
Total	0.012	0.000	0.111	0.005	0.095	0.000	10.822	0.075

Appendix Table 5: Bilateral Trade Flows for Rest of Southern Africa and Africa

	EU-South Africa-Rest of Southern Africa FTA				EU-South Africa-Rest of Southern Africa FTA & 50% Global Trade Liberalizatoin			
	EU	Rest of Southern Africa	South Africa	All Other Countries	EU	Rest of Southern Africa	South Africa	All Other Countries
EU								
Grain	0.000	38.311	25.107	0.138	0.000	35.923	18.903	5.298
Fruit & Vegetables	0.000	32.835	10.583	0.005	0.000	31.837	10.056	11.627
Other Agriculture	0.000	33.122	3.206	0.024	0.000	31.082	2.514	5.966
Livestock	0.000	31.129	2.639	0.023	0.000	29.607	2.244	7.614
Forestry & Fishery	0.000	23.770	1.676	0.022	0.000	22.583	0.034	1.536
Energy & Minerals	0.000	12.571	1.291	0.032	0.000	13.294	0.595	0.024
Food Processing	0.000	23.889	21.218	0.038	0.000	21.752	20.475	10.949
Textiles	0.000	21.829	7.536	-0.010	0.000	20.217	6.053	2.997
Apparel	0.000	22.636	13.055	-0.002	0.000	21.533	12.509	3.156
Wood & Paper	0.000	20.486	6.825	0.016	0.000	18.389	5.782	1.617
Basic Intermediates	0.000	18.916	4.110	0.017	0.000	17.631	3.085	1.967
Machinery & Equipment	0.000	11.083	6.132	0.011	0.000	9.358	4.307	1.597
Utility	0.000	0.000	0.000	0.007	0.000	0.000	0.000	-1.840
Construction	0.000	3.475	0.187	0.007	0.000	2.174	-0.861	-2.509
Trade	0.000	8.808	1.100	0.005	0.000	8.272	0.757	-1.569
Dwellings	0.000	8.513	1.077	0.002	0.000	7.785	0.757	-0.732
Public	0.000	5.338	0.160	0.002	0.000	4.234	-0.937	-1.241
Total	0.000	13.607	5.123	0.013	0.000	12.181	3.868	1.575
South Africa								
Grain	6.961	5.578	0.000	0.099	11.554	9.088	0.000	46.020
Fruit & Vegetables	18.991	30.779	0.000	0.537	19.269	29.942	0.000	18.535
Other Agriculture	7.437	30.518	0.000	0.187	6.415	28.753	0.000	2.565
Livestock	0.136	19.837	0.000	0.117	0.475	18.608	0.000	7.519
Forestry & Fishery	8.790	25.022	0.000	0.385	8.763	24.073	0.000	-0.645
Energy & Minerals	0.279	3.324	0.000	-0.001	-0.486	4.166	0.000	-0.750
Food Processing	45.971	18.690	0.000	0.961	46.026	16.657	0.000	13.515
Textiles	3.296	38.678	0.000	-0.043	2.464	35.161	0.000	5.655
Apparel	5.665	41.904	0.000	-0.096	4.298	37.148	0.000	3.238
Wood & Paper	4.125	14.900	0.000	0.069	4.161	13.190	0.000	2.003
Basic Intermediates	3.127	12.580	0.000	0.027	2.970	11.611	0.000	1.457
Machinery & Equipment	3.066	8.200	0.000	0.000	2.525	6.731	0.000	3.394
Utility	0.000	6.768	0.000	0.000	0.000	6.523	0.000	0.000
Construction	0.016	3.514	0.000	0.047	-0.356	1.909	0.000	-2.777
Trade	0.008	8.830	0.000	0.026	-0.394	7.946	0.000	-1.285
Dwellings	0.034	8.687	0.000	0.048	-0.337	7.600	0.000	-1.193
Public	0.146	5.361	0.000	0.029	-0.206	3.909	0.000	-2.108
Total	5.184	12.388	0.000	0.066	4.773	11.177	0.000	1.670
Rest of Southern Africa								
Grain	0.861	0.000	-0.417	-1.405	0.620	0.000	-5.042	-2.039
Fruit & Vegetables	88.935	0.000	24.488	2.155	89.243	0.000	23.965	8.229
Other Agriculture	7.504	0.000	3.904	-0.504	6.818	0.000	3.730	5.854
Livestock	1.019	0.000	2.346	-0.199	1.619	0.000	2.355	10.506
Forestry & Fishery	8.642	0.000	2.903	-0.137	8.703	0.000	1.530	2.528
Energy & Minerals	-0.320	0.000	4.575	-0.328	-1.223	0.000	3.885	-0.388
Food Processing	82.249	0.000	15.080	2.964	82.481	0.000	14.510	18.636
Textiles	5.231	0.000	12.055	-0.023	4.252	0.000	10.033	2.937
Apparel	9.212	0.000	28.184	0.032	7.568	0.000	26.586	4.531
Wood & Paper	2.379	0.000	12.815	-0.328	2.543	0.000	12.142	-1.240
Basic Intermediates	2.233	0.000	11.681	-0.599	2.207	0.000	10.967	1.496
Machinery & Equipment	4.412	0.000	10.077	0.143	3.805	0.000	8.451	3.215
Utility	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Construction	0.599	0.000	0.810	0.628	0.113	0.000	-0.653	-2.413
Trade	0.514	0.000	1.633	0.537	-0.044	0.000	0.806	-1.384
Dwellings	0.876	0.000	1.938	0.858	0.400	0.000	1.176	-1.067
Public	0.954	0.000	1.068	0.912	0.469	0.000	-0.502	-1.155
Total	22.896	0.000	11.832	0.086	22.419	0.000	10.809	1.455

Appendix Table 5: Bilateral Trade Flows for Rest of Southern Africa and Africa

	50% Global Trade Liberalization			
	EU	Rest of Southern Africa	South Africa	All Other Countries
EU				
Grain	0.000	13.034	5.549	5.214
Fruit & Vegetables	0.000	12.025	4.295	11.621
Other Agriculture	0.000	11.198	0.580	5.947
Livestock	0.000	11.036	0.590	7.598
Forestry & Fishery	0.000	8.334	-0.999	1.520
Energy & Minerals	0.000	6.435	-0.145	0.002
Food Processing	0.000	7.601	8.805	10.924
Textiles	0.000	7.959	2.045	3.003
Apparel	0.000	8.340	5.424	3.157
Wood & Paper	0.000	6.598	2.098	1.606
Basic Intermediates	0.000	6.678	0.833	1.955
Machinery & Equipment	0.000	2.977	1.083	1.589
Utility	0.000	0.000	0.000	-1.843
Construction	0.000	-0.188	-1.057	-2.512
Trade	0.000	2.706	0.044	-1.572
Dwellings	0.000	2.472	0.060	-0.732
Public	0.000	0.760	-1.120	-1.242
Total	0.000	4.200	1.109	1.566
South Africa				
Grain	7.951	4.107	0.000	46.046
Fruit & Vegetables	9.062	11.374	0.000	18.255
Other Agriculture	2.628	10.390	0.000	2.478
Livestock	0.430	6.512	0.000	7.469
Forestry & Fishery	4.226	9.102	0.000	-0.828
Energy & Minerals	-0.608	2.258	0.000	-0.732
Food Processing	19.150	5.429	0.000	12.963
Textiles	0.795	13.049	0.000	5.670
Apparel	1.421	12.880	0.000	3.278
Wood & Paper	2.092	4.528	0.000	1.988
Basic Intermediates	1.417	4.160	0.000	1.464
Machinery & Equipment	0.976	1.863	0.000	3.386
Utility	0.000	2.374	0.000	0.000
Construction	-0.387	-0.495	0.000	-2.830
Trade	-0.416	2.360	0.000	-1.325
Dwellings	-0.375	2.185	0.000	-1.246
Public	-0.300	0.406	0.000	-2.151
Total	1.964	3.825	0.000	1.634
Rest of Southern Africa				
Grain	0.539	0.000	-4.808	-1.008
Fruit & Vegetables	32.238	0.000	10.350	7.013
Other Agriculture	3.130	0.000	1.599	6.288
Livestock	1.207	0.000	0.939	10.711
Forestry & Fishery	4.306	0.000	-0.035	2.681
Energy & Minerals	-1.015	0.000	1.532	-0.174
Food Processing	30.564	0.000	6.312	16.844
Textiles	1.458	0.000	3.712	2.965
Apparel	2.738	0.000	11.046	4.425
Wood & Paper	1.469	0.000	5.342	-0.960
Basic Intermediates	1.218	0.000	4.822	1.934
Machinery & Equipment	1.529	0.000	3.078	3.098
Utility	0.000	0.000	0.000	0.000
Construction	-0.324	0.000	-1.300	-2.857
Trade	-0.429	0.000	-0.306	-1.783
Dwellings	-0.195	0.000	-0.114	-1.652
Public	-0.175	0.000	-1.305	-1.774
Total	8.586	0.000	4.362	1.404